



SLR-SZ – 1

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**B.Sc. – I (ECS) (Semester – I) Examination, 2017  
(Paper – I) ENGLISH (Compulsory) (CBCS Pattern) (Old)  
'On Track' English Skills for Success**

Day and Date : Tuesday, 31-10-2017

Total Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

***N.B. : 1) All questions are compulsory.  
2) Figures to the right indicate full marks.***

1. Complete the following statements by choosing the correct alternatives from those given below them :

14

1) What did the policeman look like ?

- a) Uniformed and short
- b) Uniformed and well-built
- c) Dressed in ordinary clothes and short
- d) Dressed in ordinary clothes and well-built

2) What was Binet in the lesson 'The Myths of Artificial Intelligence' ?

- a) a doctor
- b) a teacher
- c) a psychologist
- d) none of the above

3) The story 'After Twenty Years' begins with a policeman who is on his \_\_\_\_\_

- a) patrolling duty
- b) jail duty
- c) domestic duty
- d) motor bike

4) Some experts say that \_\_\_\_\_ intelligence will soon come into existence.

- a) Abnormal
- b) Natural
- c) Artificial
- d) Scientific

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- 5) Criminal Bob was wanted by \_\_\_\_\_  
a) Indian  
b) Chicago  
c) New York  
d) Washington
- 6) The poem 'Bangle Sellers' is written by \_\_\_\_\_  
a) Kamala Das  
b) Kamala Markandeya  
c) Sarojini Naidu  
d) C. B. Naidu
- 7) \_\_\_\_\_ was an uninvited guest.  
a) Miss Krishna  
b) The writer  
c) Miss Krishna's friend  
d) Miss Krishna's sister
- 8) The word 'intelligence' is derived from \_\_\_\_\_ word 'intellegere'.  
a) German  
b) Greek  
c) Latin  
d) Urdu
- 9) From what she tells the writer, it is clear that Miss Krishna's life with her mother was \_\_\_\_\_  
a) Miserable  
b) Happy  
c) Comfortable  
d) Good
- 10) The Irish airman is from \_\_\_\_\_  
a) Ireland  
b) German  
c) America  
d) India
- 11) The word 'Beauty' is \_\_\_\_\_  
a) a common noun  
b) an abstract noun  
c) a collective noun  
d) no article
- 12) Sangoli Rayanna was a great freedom fighter. The underlined word is \_\_\_\_\_ noun.  
a) Proper  
b) Collective  
c) Common  
d) Abstract
- 13) \_\_\_\_\_ P. V. Sindhu won silver medal in badminton.  
a) A  
b) An  
c) The  
d) No Article
- 14) Lalita Babar is \_\_\_\_\_ Maharashtra.  
a) from  
b) by  
c) into  
d) at



2. Answer in brief **any seven** of the following : 14
- 1) What had happened to Big Joe Brady's restaurant ?
  - 2) Why did the narrator consider Miss Krishna an annoying guest ?
  - 3) Why did the narrator invite Miss Krishna to stay at her house ?
  - 4) What was the nickname for Bob that plain clothes policeman used ?
  - 5) How can you define 'Intelligence' ?
  - 6) What is 'virtual reality' by Attila Narin ?
  - 7) What sort of relationship did Jimmy and Bob share ?
  - 8) What do you understand about Miss Krishna's childhood from 'The Connoisseur' ?
3. A) Write short answers on **any two** of the following : 8
- 1) What is the theme of the poem 'Bangle Sellers' ?
  - 2) What is the Irish airman's attitude towards the war he is fighting in ?
  - 3) What type of bangles are carried by the bangle sellers ?
- B) Write a paragraph on **any two** of the following : 6
- 1) Advantages and disadvantages of mobile.
  - 2) Democracy.
  - 3) My Aim in Life.
4. Write an essay on **any one** : 14
- 1) The Superstitions.
  - 2) Corruption – Causes, Effects and Remedies.
5. Read the following passage and make notes of it. Use an appropriate title for your notes : 14
- Food, generally speaking, decays as the time passes. Some spoil within hours while others take days or weeks. Cooked food, uncooked meat and fish or fruits lose their freshness, become old and spoil in warm, wet air as these undergo changes because of bacteria. Before modern methods of preservation came to be known, food items were prevented from decomposing with the help of salt, heat of the Sun, oil, etc. Fish can be preserved by salting it in heat of the Sun. Another traditional example is the pickles in oil so that we keep in bottles. We put salt and soak pickles in oil so that they remain fresh.



But today, food science and food technology have helped us preserve food with their modern techniques, Factories prepare and produce readymade foods-meat, fish, peas and fruits. They use certain processes like canning, dehydration, smoke and refrigeration.

Foods can be preserved by controlling or destroying the agents like warm and wet air, bacteria, insects and rodents.

Canning is a thermal or heat processing where foods are subjected to temperatures that are high enough to kill micro-organisms. Foods are sterilized in air tight and heat resistant pouches.

Dehydration removes water from food and thus prevents bacteria from growing. It then compresses and freeze-dries food which can resume their normal state on rehydration.

Refrigeration helps store foods with their nutrients and flavours. But smoke treatment to foods can preserve them only for a short time.

Certain substances in small amounts are added to foods to make them last longer, to give them colour, to add flavour to them, to add minerals. They are known as additives. Bezoates, propionic acids, sodium and calcium salts are a few preservatives. Yellow carotene dyes add colour. Ascorbic acid helps to prevent discolouration in canned foods. Additives are found in baked foods, confectionary items, soft drinks and juices.

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**B.Sc. (E.C.S.) – I (Semester – I) (CBCS Pattern) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – II : Fundamental of Computer**

Day and Date : Wednesday, 1-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. A) Choose the **correct** alternative. **10**
- 1) Fifth generation computers are based on
    - a) Artificial Intelligence
    - b) Programming Intelligence
    - c) System Knowledge
    - d) VVLSI
  - 2) Any data or instruction entered into the memory of a computer is considered as
    - a) Storage
    - b) Output
    - c) Input
    - d) Information
  - 3) \_\_\_\_\_ is not an application software package.
    - a) Redhat Linux
    - b) Microsoft Office
    - c) Adobe Pagemaker
    - d) None
  - 4) A computer port is used to
    - a) Communicate with hard disks
    - b) Download files
    - c) Communicate with other computer peripherals
    - d) None
  - 5) \_\_\_\_\_ PowerPoint feature you use to apply motion effects to different objects of a slide.
    - a) Slide Transition
    - b) Slide Design
    - c) Animation Objects
    - d) Animation Scheme

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- 6) \_\_\_\_\_ view header and footer are visible in MSWORD.
- a) Normal
  - b) Page layout
  - c) Print layout
  - d) Slide
- 7) \_\_\_\_\_ item appears dimly behind the main body text.
- a) Background
  - b) Watermark
  - c) Backcolor
  - d) Emboss
- 8) We can use drag and drop method to
- a) copy all contents
  - b) move cell contents
  - c) all cell contents
  - d) a and b both
- 9) The \_\_\_\_\_ feature automatically adds range of the cell values in MSEXCEL.
- a) map
  - b) autosum
  - c) autocheck
  - d) formula
- 10) Status indicators are located on the \_\_\_\_\_ in MSEXCEL.
- a) Scroll bar
  - b) Status bar
  - c) Formula bar
  - d) Title bar

B) State **true** or **false**.

4

- 1) Android is windows based operating system.
- 2) Programs are executed on the basis of priority number in a multitasking.
- 3) Minicomputers are used as server for any medium size organisation.
- 4) Daisy wheel printer is also known as Golfball printer.

2. Answer **any seven** of the following :

14

- 1) What is hyperlink in MS WORD ?
- 2) Write the difference between hardware and software.
- 3) List various uses of Microsoft PowerPoint.
- 4) List various types of Android O.S.
- 5) Write the difference between DOS and Windows O.S.



- 6) Explain page setting in MS WORD.
  - 7) Explain concept of Templates in MS WORD.
  - 8) Write the various types of Software.
  - 9) Explain Exporting data in MS Excel.
3. A) Answer **any two** of the following : **10**
- 1) Explain various types of input devices with example.
  - 2) Write a note on Mobile O.S. and explain features of Android.
  - 3) Write various functions used in MS Excel.
- B) Write the difference between Internal and External commands of DOS. **4**
4. Answer **any two** of the following : **14**
- 1) Write a note on storage devices.
  - 2) Write the difference between impact and nonimpact printer with example.
  - 3) Explain Analog and Digital types of computers.
5. Answer **any two** of the following : **14**
- 1) What is Operating System ? Explain various services provides by an OS.
  - 2) Write a note on Architecture and Components of Linux.
  - 3) What is mail merge ? Explain the steps for creating mail merge.
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**B.Sc. (ECS) – I (Semester – I) (CBCS) Examination, 2017**  
**Paper – III : PROGRAMMING USING ‘C’**

Day and Date : Thursday, 2-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) A figure to the **right** indicates **full** marks.

1. Choose **correct** alternatives: **14**

- 1) \_\_\_\_\_ is data type of string.  
a) void                      b) int                      c) char                      d) double
- 2) \_\_\_\_\_ statement that transfer the control to check condition in loop.  
a) if                      b) continue                      c) break                      d) switch
- 3) The statement  $6 << 5$  in ‘C’ language results  
a) 30                      b) 1                      c) 11                      d) 192
- 4) Preprocessor statement starts with \_\_\_\_\_ symbol.  
a) @                      b) \$                      c) #                      d) %
- 5) \_\_\_\_\_ gives the picture layout about logic of program.  
a) algorithm                      b) flowchart                      c) pseudo code                      d) all of these
- 6) Identify the output of following ‘C’ code :

```
void main ( )  
{  
    int a, b;  
    a = sizeof(float);  
    b = sizeof(void);  
    printf(“%d %d”, a, b);  
}
```

- a) 4 0                      b) 4 null
- c) 8 0                      d) Compilation error





- 7) \_\_\_\_\_ is integral data type.  
a) int                      b) char                      c) double                      d) both a and b
- 8) By using \_\_\_\_\_ type of array, we can perform matrix operations.  
a) One dimensional                      b) Two dimensional  
c) Both a and b                      d) None of these
- 9) strcmp (A, B) function returns zero value if  
a)  $A \neq B$                       b)  $A > B$   
c)  $A < B$                       d)  $A = B$
- 10) \_\_\_\_\_ is valid identifier in 'C' language.  
a) if                      b) while  
c) break                      d) none of these
- 11) Single 'C' program has \_\_\_\_\_ number of main ( ) functions.  
a) One                      b) Two  
c) Three                      d) As many depends on programmer
- 12) If 'sz' is size of array then \_\_\_\_\_ is true.  
a)  $sz == 0$                       b)  $sz \leq 1$   
c)  $sz > 1$                       d) Both a and b
- 13) In structure of 'C' program, \_\_\_\_\_ is compulsory section.  
a) Documentation section                      b) Link section  
c) Main ( )                      d) Definition section
- 14) \_\_\_\_\_ is not feature of 'C' language.  
a) Extendibility                      b) Portability  
c) Reusability                      d) Both a and b



2. Attempt **any seven** of the following : 14
- 1) What is table of string ?
  - 2) What is run time error ?
  - 3) Write syntax to use increment operators.
  - 4) List out different rules to declare variable in 'C' language.
  - 5) List out different bitwise operators with their use.
  - 6) Why flowchart is better than algorithm ?
  - 7) Write pseudo code to find addition of two numbers.
  - 8) Write importance of header file.
  - 9) What is the role of compiler ?
3. A) Attempt **any two** of the following : 10
- 1) Write a program that calculates multiplication of two matrices.
  - 2) What is data type ? Explain all primitive data types in detail.
  - 3) Write a program that check entered number is palindrome or not.
- B) Write a program to check two strings are identical or not. 4
4. Attempt **any two** of the following : 14
- A) What is Flowchart ? List out its characteristics. And draw the flowchart to check entered number is Prime or not.
- B) Explain 'switch' statement with example.
- C) Write a program that prints following pattern : (Use 'for' loop)
- ```
E   D   C   B   A
E   D   C   B
E   D   C
E   D
E
```
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5. Attempt **any two** of the following :

**14**

A) Write a program to print following series up to 'n' numbers. (Use any Loop)

0    1    1    2    3    5    8    13    21    ---

B) What is array ? Explain all types of array in details.

C) What is Algorithm ? List out its characteristics. And write the algorithm check entered number is Armstrong or not.

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**B.Sc. (ECS) – I (Semester – I) (CBCS) Examination, 2017**  
**LINEAR ELECTRONICS – I (Paper – IV)**

Day and Date : Friday, 3-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right place indicate full marks.**  
3) **Neat diagram must be drawn wherever necessary.**

1. Choose **correct** alternative.

14

- 1) Semiconductor have \_\_\_\_\_ temperature coefficient of resistor.
  - a) Positive
  - b) Negative
  - c) Zero
  - d) None of these
- 2) \_\_\_\_\_ is a passive component.
  - a) Resistor
  - b) Transistor
  - c) Vacuum triode
  - d) Tunnel diode
- 3) Output impedance of ideal op-amp. is
  - a) Zero
  - b) Medium
  - c) Infinite
  - d) None of these
- 4) BJT is a \_\_\_\_\_ Transistor.
  - a) Bipolar
  - b) Unipolar
  - c) Discrete
  - d) None of these
- 5) In P-type semiconductor \_\_\_\_\_ are majority charge carriers
  - a) Electron
  - b) Hole
  - c) Neutron
  - d) None of these

P.T.O.



- 6) The base region of transistor is thin and \_\_\_\_\_ doped.  
a) Heavily                                          b) Lightly  
c) Metallic                                         d) None of these
- 7) In case of linear resistor current and applied voltage are related as  
a) Directly proportional                      b) Not directly  
c) Inversely proportional                    d) None of these
- 8) In bridge rectifier \_\_\_\_\_ diodes are used.  
a) 2                                          b) 4                                          c) 1                                          d) 3
- 9) The time constant of R – C circuit is  
a) RC                                          b) R/C  
c) C/R                                          d) None of these
- 10) An electronic circuit use to increase the strength of signal is known as  
a) Oscillator                                  b) Multivibrator  
c) Amplifier                                  d) None of these
- 11) Insulator is a \_\_\_\_\_ conductor of electricity.  
a) Bad                                          b) Good                                          c) Medium                                  d) None of these
- 12) Collector -Base junction of transistor is always  
a) Forward                                  b) Reverse  
c) Zero                                          d) None of these
- 13) The phase shift of BJT in Input and Output is \_\_\_\_\_ degree.  
a) Zero                                          b) 90                                          c) 180                                          d) 360
- 14) Electrolyte capacitor is a \_\_\_\_\_ type capacitor.  
a) Polar                                          b) Non polar  
c) Variable                                      d) None of these

2. Attempt **any seven** of the following :

14

- 1) Give the classification of material on the basis of band theory.
- 2) Define line and load regulation.
- 3) Explain Q point.



- 4) Explain charging and discharging of capacitor.
  - 5) State different parameters of op amp.
  - 6) Give specification of resistance.
  - 7) State different types of filter circuit.
  - 8) Draw the symbol different types of BJT.
  - 9) Draw the diagram of op amp. as inverting and non inverting amplifier.
3. A) Attempt **any two** of the following : **10**
- 1) State and explain Kirchhoff's laws.
  - 2) Explain op-amp as an adder and subtractor.
  - 3) Write a note on SMPS.
- B) Explain construction and working of electrolyte capacitor. **4**
4. Attempt **any two** of the following : **14**
- 1) Define resistance. Give classification and explain different types of variable resistor.
  - 2) Give classification of amplifier according to coupling method. Explain with suitable diagram RC coupled amplifier.
  - 3) Explain with suitable diagram output characteristics of CE configuration.
5. Attempt **any two** of the following : **14**
- 1) Explain with suitable diagram frequency response curve in CE amplifier.
  - 2) Define semiconductor. Explain different types of semiconductor in brief.
  - 3) State and explain different types of full wave rectifier.



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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2017**  
**Paper – V : DIGITAL ELECTRONICS – I**

Day and Date : Monday, 06-11-2017

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to right indicate full marks.**  
3) **Draw circuit diagram wherever necessary.**

1. Multiple choice questions.

14

- 1) One flip flop stores \_\_\_\_\_ no of bits.  
a) 2                      b) 4                      c) 8                      d) 1
- 2) Base of octal no system is  
a) 16                      b) 8                      c) 2                      d) 10
- 3) Toggling of output occurs in \_\_\_\_\_ flip flop.  
a) RS                      b) D                      c) JK                      d) T
- 4) NOT gate is \_\_\_\_\_ inverter.  
a) octet                      b) hex                      c) dual                      d) quad
- 5) NAND gate is \_\_\_\_\_ gate.  
a) basic                      b) universal  
c) hex inverter                      d) none of these
- 6) IC 7400 is \_\_\_\_\_ type gate.  
a) NAND                      b) NOR                      c) AND                      d) OR
- 7) Full adder uses EXOR, \_\_\_\_\_ gates.  
a) OR, AND                      b) OR                      c) AND                      d) AND, NOT



- 8) IC \_\_\_\_\_ is shift register.  
a) 7490                      b) 74150                      c) 7495                      d) 74138
- 9) Excess – 3 code of 4 is  
a) 0100                      b) 0110                      c) 1110                      d) 0111
- 10) \_\_\_\_\_ is circuit with many input and one output.  
a) Multiplexer                      b) De multiplexer  
c) Encoder                      d) Decoder
- 11) \_\_\_\_\_ code is used for error detection.  
a) excess – 3                      b) hamming                      c) BCD                      d) binary
- 12) Half adder makes addition of \_\_\_\_\_ input.  
a) 2                      b) 3                      c) 4                      d) 8
- 13) IC 7490 is  
a) register                      b) counter                      c) gate                      d) encoder
- 14) BCD equivalent for decimal 49 is  
a) 10010100                      b) 01101000                      c) 01001001                      d) 01011001

2. Answer **any seven** of the following :

**14**

- 1) Write binary rules for addition and subtraction.
- 2) Build AND and OR gate by using NAND gate.
- 3) Define de multiplexer.
- 4) Explain ring counter.
- 5) Give difference between MOD-5 and MOD-10 counter.
- 6) Explain concept of gray code.
- 7) Explain SIPO and PISO.
- 8) Convert 15 in decimal to binary.
- 9) Give difference between encoder and decoder.

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3. A) Answer **any two** of the following : **10**
- 1) Explain De Morgan's theorem.
  - 2) Explain 8 : 1 multiplexer.
  - 3) Explain 3-bit synchronous up counter.
- B) Explain excess – 3 code. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain octal, hexadecimal system.
  - 2) Explain half and full adder.
  - 3) Explain master slave JK flip flop.
5. Attempt **any two** of the following : **14**
- 1) Explain logic gates with pin function.
  - 2) Explain K-map for four variable with example.
  - 3) Explain clocked RS flip flop.
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**B.Sc. (E.C.S.) – I (Semester – I) Examination, 2017  
(CBCS Pattern)  
MATHEMATICS (Paper – VI)  
Discrete Structures**

Day and Date : Tuesday, 7-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :** 1) *Use of scientific calculator is allowed.*  
2) *All questions are compulsory.*  
3) *Figures to the right indicate full marks.*

1. Choose the **correct** alternative :

14

- 1) A graph G which have parallel edges but no loop is called as \_\_\_\_\_ graph.  
a) Simple      b) Multi      c) Pseudo      d) Regular
- 2) The vertex of degree  $\perp$  is called as \_\_\_\_\_ vertex.  
a) Pendant      b) Special  
c) Isolated      d) Pseudo
- 3) The complement of a null graph is \_\_\_\_\_ graph.  
a) Regular      b) Simple  
c) Complete      d) Bipartite
- 4) Total degree of  $K_6$  is  
a) 30      b) 36      c) 5      d) None of these
- 5) If a simple graph G is isomorphic to it's own complement then the graph G is called as \_\_\_\_\_ graph.  
a) Isomorphic      b) Complement  
c) Self complementary      d) None of the above

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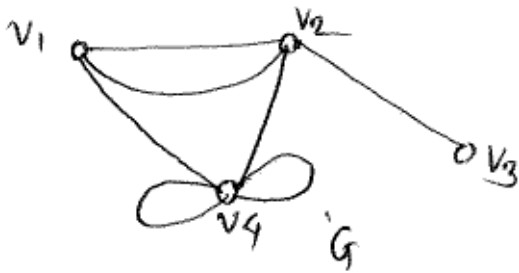
- 6) If a simple graph  $G_1$  has 5 vertices and 4 edges and a simple graph  $G_2$  has 3 vertices and 3 edges then the number of edges in the graph  $G_1 \times G_2$  are
- a) 15                      b) 29                      c) 27                      d) None of these
- 7) If  $|A| = 102$ ,  $|B| = 95$  and  $|A \cap B| = 52$  then  $|A \cup B| =$
- a) 145                      b) 249                      c) 197                      d) 102
- 8) The solution of a linear recurrence relation with constant coefficients of order  $K$  is called as
- a) Homogeneous solution                      b) Linear solution  
c) Particular solution                      d) Total solution
- 9) A walk in which \_\_\_\_\_ is repeated is called as trial.
- a) No edge                      b) No vertex  
c) Edge                      d) Vertex
- 10) A connected graph  $G$  is Eulerian if and only if degree of each vertex in  $G$  is
- a) Same                      b) Prime  
c) Even                      d) Odd
- 11) In a binary tree, vertex of degree 2 is called as \_\_\_\_\_ of the tree.
- a) Leaf                      b) Root  
c) Internal vertex                      d) Intermediate vertex
- 12) A tree with 12 vertices has \_\_\_\_\_ edges.
- a) 11                      b) 12                      c) 13                      d) 66
- 13) Edge connectivity of a dis connected graph is
- a) 1                      b) 2                      c) 1 or 2                      d) 0
- 14) If graph  $G_1$  has 'm' vertices and graph  $G_2$  has 'n' vertices then graph  $G_1 \times G_2$  has \_\_\_\_\_ vertices.
- a)  $m.n$                       b)  $m + n$   
c)  $2mn$                       d) None of these



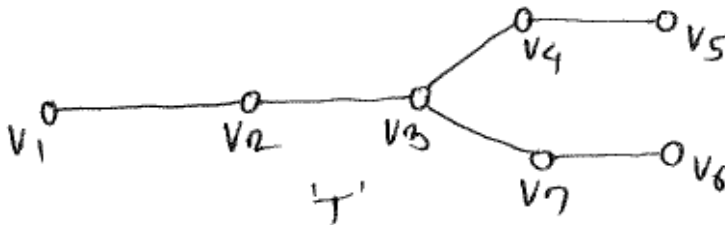
2. Attempt **any seven** of the following :

14

- 1) Draw a graph which is Hamiltonian but not Eulerian.
- 2) Define edge deleted subgraph.
- 3) Define linear recurrence relation with constant coefficients.
- 4) Find total degree of the following graph.



- 5) Define Eulerian graph. Give one example.
- 6) Define trail and path.
- 7) Find centre of the following tree.



- 8) Draw the graph  $K_5$  and  $N_5$ .
- 9) Define vertex disjoint subgraphs and edge disjoint subgraphs.

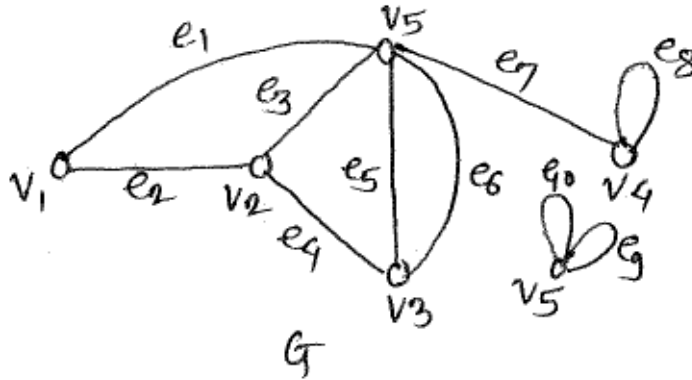
3. A) Attempt **any two** of the following :

10

- 1) State and prove shaking hand lemma.
- 2) Write a brief note on Koningsberg's 7 bridge problem.

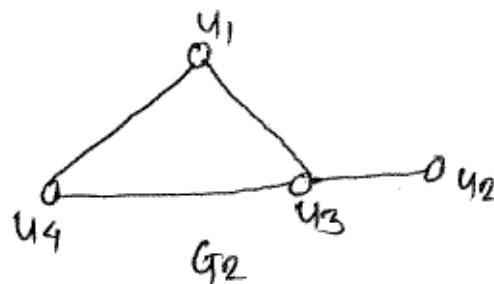
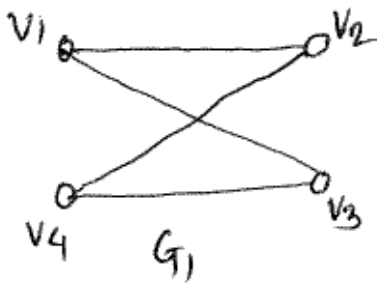


3) Write adjacency matrix and incidence matrix for the graph given below.



B) From the following graphs  $G_1$  and  $G_2$  draw the graph  $G_1 \times G_2$ .

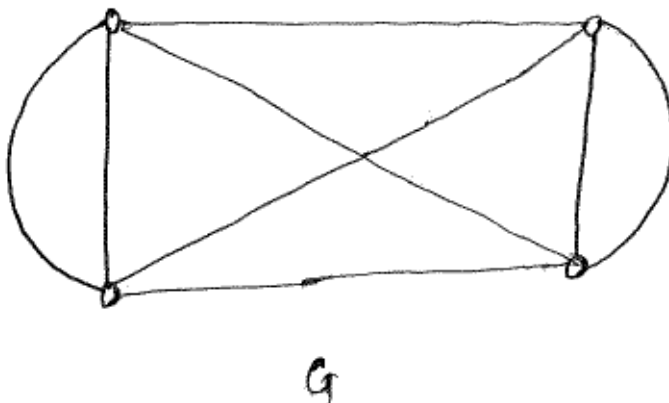
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4. Attempt **any two** of the following :

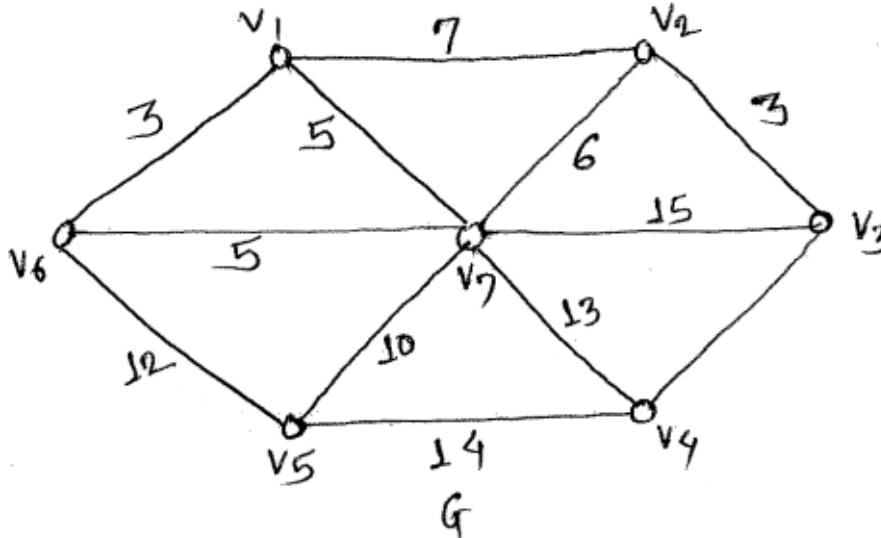
14

1) Show that the graph  $G$  given below is Eulerian. Hence by using Fleury's algorithm trace an Euler's circuit in it.

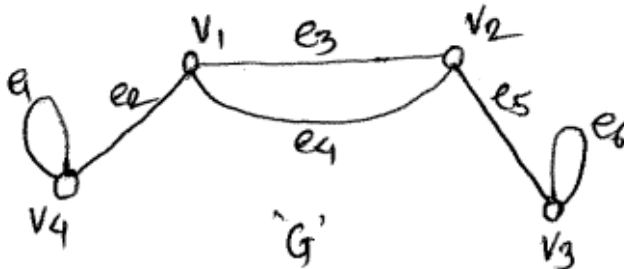




- 2) By using Kruskal's algorithm find the shortest spanning tree and its weight for the following graph.



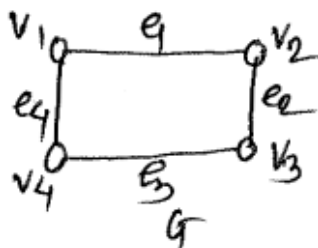
- 3) Define isthmus, cut vertex, vertex connectivity. Hence find all the isthmus and cut vertex of the following connected graph G.



5. Attempt **any two** of the following :

14

- 1) Draw all possible spanning subgraphs of the following graph G.



- 2) Find solution of recurrence relation  $a_n - 7a_{n-1} + 10a_{n-2} = 0$  with initial conditions  $a_0 = 4$  and  $a_1 = 17$ .
- 3) Define the following with suitable example.
- i) Bipartite graph
  - ii) Complete graph
  - iii) Regular graph
  - iv) Simple graph



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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2017**  
**MATHEMATICS (Paper – VII)**  
**Numerical Methods**

Day and Date : Wednesday, 8-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. : 1) Use of scientific calculator is allowed.***  
***2) All questions are compulsory.***  
***3) Figures to the right indicate full marks.***

1. Choose the **correct** alternative.

14

- Homogeneous system of linear equations is
  - always consistent
  - never consistent
  - always inconsistent
  - none of these
- While doing multiplication of two numbers in normalised floating point form the exponents should be
  - Added
  - Multiplied
  - Made equal
  - Subtracted
- The real root of the equation  $x^3 - 9x + 1 = 0$  lies between
  - 3 and 4
  - 2 and 3
  - 1 and 2
  - 0 and 1
- $E^{-2} f(x+h) =$  \_\_\_\_\_
  - $f(x+2h)$
  - $f(x-2h)$
  - $f(x-h)$
  - $f(x+h)$
- To find the numerical value of integration in the interval  $(a, b)$  taking  $(n+1)$  equidistant ordinates, the interval at integration  $(a, b)$  is divided into \_\_\_\_\_ equal subintervals.
  - $n+1$
  - $n$
  - $n-1$
  - $2n$



- 6) Taylor's series method is used to solve \_\_\_\_\_ equations.
- a) Non linear                      b) Transcendental  
c) Differential                      d) Linear
- 7) The first approximation of a root  $x^3 + 3x - 1 = 0$  by using Newton-Raphson method taking initial approximation  $x_0 = 0$  is
- a) 0.3                      b) 0.32                      c) 0.33                      d) 0.66
- 8)  $1.5151 \text{ E4} - 0.3121 \text{ E5} =$
- a)  $8.3941 \text{ E5}$                       b)  $0.8394 \text{ E4}$                       c)  $8.2727 \text{ E5}$                       d)  $0.4636 \text{ E5}$
- 9) The order of augmented matrix of a system of 3 linear equations in 4 variables is
- a)  $3 \times 5$                       b)  $3 \times 4$                       c)  $4 \times 3$                       d)  $4 \times 5$
- 10) If the data is equally spaced and interpolation is near the beginning of the data then \_\_\_\_\_ interpolation formula is used.
- a) Newton's backward difference                      b) Newton's divided difference  
c) Lagrange's                      d) Newton's forward difference
- 11) If each variable of the system of m-linear equations in n-variables is a leading variable then the system posses \_\_\_\_\_ solutions.
- a) Infinity                      b) Unique                      c) No                      d) Infinitely many
- 12)  $E\nabla = \nabla E =$
- a)  $\nabla$                       b)  $\Delta$                       c) a or b                      d) a and b
- 13) By putting n = \_\_\_\_\_ in the general quadrature formula, simpson's  $\left(\frac{1}{3}\right)^{\text{rd}}$  is obtained.
- a) 1                      b) 2                      c) 3                      d) 4
- 14) While doing addition of two numbers in normalised floating point form, the mantissa's should be
- a) Added                      b) Subtracted  
c) Made equal                      d) None of these





2. Attempt **any seven** of the following :

14

1) Write augmented matrix for the following 3 system of linear equations.  
 $2x + 3y - 4z = 6$  ;  $-5x + z = -2$  ;  $x + y + z + p = 5$  .

2) Reduce the following matrix into row echelon form  $G = \begin{pmatrix} 2 & 4 & 6 \\ 3 & 5 & 9 \\ -1 & -2 & -3 \end{pmatrix}_{3 \times 3}$

3) State Lagrange's interpolation formula for the data containing four arguments  $x_0, x_1, x_2$  and  $x_3$ .

4) Prove that  $\Delta = E \nabla$  .

5) State Bisection formula and regular falsi method formula to find first approximation for the root of the equation  $f(x) = 0$ .

6) State general quadrature formula for equidistant ordinates.

7) State the formulae for  $K_1, K_2$  and  $K$  in Runge-Kutta second order method.

8) Define relative error and percentage error.

9) Find the interval in which root of the equation  $x^3 - 2x - 5 = 0$  lies.

3. A) Attempt **any two** of the following :

10

1) Use Euler's method to find the value of  $y$  at  $x = 1.3$  for the differential equation  $\frac{dy}{dx} = 1 + xy$  . Given that  $x_0 = 1, y_0 = 1.2, h = 0.1$ .

2) State Newton's backward difference interpolation formula and Newton's forward difference interpolation formula. Hence prepare forward difference table for the data given below.

|                 |        |        |        |        |        |
|-----------------|--------|--------|--------|--------|--------|
| <b>x</b>        | 2.7    | 2.8    | 2.9    | 3.0    | 3.1    |
| <b>y = f(x)</b> | 5.4739 | 6.0496 | 6.6859 | 7.3891 | 8.1662 |

3) Derive Newton-Raphson formula to find root of the equation  $f(x) = 0$ .

Set P



B) Write an algorithm to find inverse of given matrix A by using row reduction method. 4

4. Attempt **any two** of the following : 14

1) Evaluate  $\int_0^1 \frac{1}{(1+x)} dx$  by using Trapezoidal rule. Take  $h=0.125$ .

2) By using Newton's forward difference interpolation formula, find the value of y at  $x = 22.5$  from the following data.

|          |         |         |         |         |
|----------|---------|---------|---------|---------|
| x        | 21      | 25      | 29      | 33      |
| y = f(x) | 18.4708 | 17.8144 | 17.1070 | 16.3432 |

3) Write an algorithm to solve system of m-linear equations in n-variables by using Gauss-Jordan Method.

5. Attempt **any two** of the following : 14

1) By using Runge-Kutta fourth order method estimate the value of y at  $x = 1.4$  for the differential equation  $\frac{dy}{dx} = x^2 + y^2$ , with initial conditions  $x_0 = 1.2$ ,  $y_0 = 1.54$ . Take  $h = 0.2$ .

2) Find approximate value of root of equation  $xe^x - 3 = 0$  by using Regula Falsi method in the interval  $[1, 1.1]$ . perform only three iterations.

3) Derive Simpson's  $\left(\frac{1}{3}\right)^{\text{rd}}$  rule.

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- 5) The measure of central tendency that based on all observations is  
a) A.M. b) Median  
c) Mode d) All of these
- 6) A frequency curve is used to determine  
a) A.M. b) Median  
c) Mode d) None of these
- 7) The most reliable measure of dispersion is  
a) S.D. b) Q.D. c) Range d) All of these
- 8) If each observation is multiplied by 10, then C.V. becomes  
a) as it is b) increased by 10%  
c) increased by 10 times d) None of these
- 9) For a positively skewed distribution  
a)  $(Q_3 - Q_2) = (Q_2 - Q_1)$  b)  $(Q_3 - Q_2) > (Q_2 - Q_1)$   
c)  $(Q_3 - Q_2) < (Q_2 - Q_1)$  d) None of these
- 10) First order central moments is  
a) Always zero b) Always A.M.  
c) Sometimes zero d) None of these
- 11) Let A : Sample is sub-set of population  
B : Sampling is economical  
a) A and B both true b) A and B both false  
c) A is true, B is false d) None of these
- 12) Let A : The second order central moment is variance  
B : The second order raw moment is S.D.  
a) A and B both true b) A and B both false  
c) A is true, B is false d) None of these
- 13)  $Q_1$  (first quartile) divides the data in the ratio 1:3, if data is arranged in \_\_\_\_\_ order.  
a) Ascending b) Descending  
c) Ascending or descending d) None of these
- 14) \_\_\_\_\_ is not a relative measure of dispersion.  
a) Coefficient of range b) Coefficient of Q.D.  
c) C.V. d) None of these



2. Attempt **any seven** of the following : 14
- 1) Define – frequency.
  - 2) Define – C.V.
  - 3) State any two demerits of median.
  - 4) State any two advantages of sampling method.
  - 5) Given :  $Q_1 = 40, Q_2 = 65, Q_3 = 80$  find Q.D. and coefficient of Q.D.
  - 6) The first 2 raw moments are 4 and 49 respectively. Find S.D.
  - 7) Find mean for : 10, 12, 8, 16, 13, 20
  - 8) Given : mean = 20 and mode = 34. Comment on skewness.
  - 9) Using empirical relation find mode if mean and median of a distribution are 25 and 33 respectively.

3. A) Attempt **any two** of the following : 10
- 1) The A.M. of age of combined group of men and women is 30 years. If A.M. of age of men and women are 34 and 27 respectively, then find the ratio of men and women in the group.
  - 2) Find S.D. for the observations : 7, 15, 11, 9, 17.
  - 3) Write a note on cumulative frequency distribution.

B) Define – Skewness. Explain types of skewness. 4

4. Attempt **any two** of the following : 14
- 1) Draw less than ogive to represent the following data and hence obtain median.

|                  |       |       |       |       |       |        |
|------------------|-------|-------|-------|-------|-------|--------|
| <b>Class</b>     | 15-30 | 30-45 | 45-60 | 60-75 | 75-90 | 90-105 |
| <b>Frequency</b> | 8     | 20    | 29    | 24    | 11    | 5      |

2) Find Q.D. and coefficient of Q.D. for the data given below.

|                  |       |       |       |       |       |
|------------------|-------|-------|-------|-------|-------|
| <b>Class</b>     | 20-25 | 25-30 | 30-35 | 35-40 | 40-45 |
| <b>Frequency</b> | 9     | 17    | 23    | 20    | 11    |

3) Explain stratified sampling method and give one illustrative example.



5. Attempt **any two** of the following :

**14**

1) Explain construction of histogram.

2) Given :

$$n = 20, \sum (X - A.M.)^2 = 525, \sum (X - A.M.)^3 = -422, \sum (X - A.M.)^4 = 978.5 .$$

Find coefficient of skewness and kurtosis and comment on result.

3) For the data given below find missing frequency of the class 60-75 if mode is 56.

| Class     | 15-30 | 30-45 | 45-60 | 60-75 | 75-90 | 90-105 |
|-----------|-------|-------|-------|-------|-------|--------|
| Frequency | 10    | 22    | 36    | –     | 19    | 9      |



SLR-SZ – 9

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**B.Sc. (ECS) (Part – I) (Semester – I) (CBCS – Pattern)**  
**Examination, 2017**  
**Paper – IX : PROBABILITY THEORY – I**

Day and Date : Friday, 10-11-2017

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :** i) **All questions are compulsory.**  
ii) **Figures to right indicate full marks.**  
iii) **Use of any type of calculator is allowed.**

1. Select **most** correct alternative.

**14**

- 1) In  ${}^n C_r$ , 'n' and 'r' are  
a) real numbers  
b) integers  
c) non-negative integers  
d) none of these
- 2) Number of ways by which a committee of 'r' members out of 'n' is to be formed such that a particular member is always in the committee is  
a)  ${}^n C_r$   
b)  ${}^{n-1} C_r$   
c)  ${}^n C_{r-1}$   
d)  ${}^{n-1} C_{r-1}$
- 3) Number of different ways by which 'n' distinct items are to arranged is  
a) n!  
b)  ${}^n C_n$   
c) 1  
d) n
- 4) Number of different words that can be formed by arranging the letters of the word 'SUNDAY' are  
a)  ${}^6 P_6$   
b)  ${}^6 C_6$   
c) 6  
d) none of these
- 5) The probability of an event is 1 always, it is \_\_\_\_\_ event.  
a) sure  
b) impossible  
c) complementary  
d) none of these

P.T.O.



- 6) In die throwing experiment if A : getting even number, B : getting odd number. Then events A and B are
- a) mutually exclusive                      b) equally likely  
c) exhaustive                                  d) all of these
- 7) If A and B are independent events, then
- a)  $\bar{A}$  and  $\bar{B}$  are independent              b)  $P(A \cap B) = 0$   
c)  $P(A \cup B) = P(A) + P(B)$               d) none of these
- 8) If A, B and C are exhaustive events, then
- a)  $P(A) + P(B) + P(C) = 1$               b)  $P(A \cup B \cup C) = 1$   
c)  $P(A \cap B \cap C) = 0$                       d) none of these
- 9) Random variable is a real valued function whose
- a) domain is sample space                  b) co-domain is set of real numbers  
c) both (a) and (b)                          d) none of these
- 10) For a discrete r.v. X  $E(X) = 5$  and  $E(X^2) = 30$ , then variance of X is
- a) 5                                              b) 30                                              c) 25                                              d) none of these
- 11) The c.d.f. of a discrete r.v. X is F(X), then
- a)  $F(-\infty) = 0$                                   b) F(X) is step function  
c)  $F(\infty) = 1$                                   d) all of these
- 12) \_\_\_\_\_ distribution has mean = variance always.
- a) Binomial                                      b) Poisson  
c) Hyper geometric                              d) Uniform
- 13) If mean and variance of binomial distribution are 24 and 8 respectively, then the parameter 'P' is
- a) 1/3                                              b) 2/3                                              c) 1/2                                              d) none of these
- 14) A discrete r.v. X taking values 10, 20, 30, 40 has uniform distribution, then  $P(X = 15) =$
- a) 1/4                                              b) 1/2                                              c) 0                                                d) none of these





2. Attempt **any seven** of the following :

14

- 1) Define – Permutations, Combinations.
- 2) Define – Probability mass function.
- 3) Define – mutually exclusive events.
- 4) Given :  $P(A) = 0.4, P(B) = 0.3$  find  $P(A \cap B)$  if events A and B are independent.
- 5) If  $X \rightarrow B(10, 0.7)$ , state  $E(X), V(X)$ .
- 6) Find value of k if following is the p.m.f. of discrete r.v.X.

|             |    |      |      |    |
|-------------|----|------|------|----|
| <b>X</b>    | 5  | 7    | 9    | 11 |
| <b>P(x)</b> | 4k | 0.3k | 0.5k | k  |

- 7) Find value of n if  ${}^n P_2 + {}^{n+2} P_2 = 42$ .
- 8) If  $X \rightarrow H(20, 8, 5)$  state S.D. of X.
- 9) Find parameter of Poisson distribution if  $P(X = 1) = P(X = 2)$ .

3. A) Attempt **any two** of the following :

10

- 1) Find number of passwords to be formed using the digits 2, 4, 6, 8 and alphabets A, B, C, D such that an alphabet is followed by two digits and repetition of digits is allowed.
- 2) A box contains 6 black and 4 red balls Two balls are drawn at random one by one without replacement. Find probability of getting first red and second black ball.
- 3) Following is the p.m.f. of discrete r.v. X. Find  $P(X + 5 > 8)$  and  $P(4 < X^2 < 25)$ .

|             |     |      |      |     |     |     |
|-------------|-----|------|------|-----|-----|-----|
| <b>X</b>    | 0   | 1    | 2    | 3   | 4   | 5   |
| <b>P(x)</b> | 0.1 | 0.15 | 0.05 | 0.3 | 0.2 | 0.2 |

B) Define – Poisson distribution. Give two real life situations where it is applicable.

4



4. Attempt **any two** of the following :

14

- 1) Give classical definition of probability. Explain its limitations.
- 2) A box contains 12 tomatoes of which 4 are rotten. Two tomatoes are selected at random without replacement, obtain probability distribution of number of rotten tomatoes in the sample.
- 3) Let  $X \rightarrow B(5, 0.4)$  and  $Y \rightarrow B(6, 0.4)$  be two independent random variables. Find :
  - i)  $P(X + Y = 4)$
  - ii)  $P(X + Y < 9)$

5. Attempt **any two** of the following :

14

- 1) Define binomial distribution, under which conditions it is applicable. State additive property of it.
- 2) A die is thrown 2 times. Let A : first toss is odd, B : second toss is even and C : sum of numbers is 7. Discuss independence of A, B and C.
- 3) Show that

i) 
$$\frac{1}{(n-1)!} + \frac{1}{(n-2)!} = \frac{n^2}{n!}$$

ii) 
$$1.3.5.7.....(2n-3).(2n-1) = \frac{(2n)!}{2^n (n!)}$$

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**SLR-SZ – 10**

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**B.Sc. – I (ECS) (Semester – II) (New) (CBCS) Examination, 2017**  
**Paper – I : ENGLISH (Comp.)**  
**On Track : English Skills for Success**

Day and Date : Tuesday, 14-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

1. Complete the following sentences by choosing the correct alternatives from those given below them.

**14**

- 1) Dr. Kalam had successfully tested \_\_\_\_\_ in France.
  - a) V-2 missile
  - b) Jupiter missile
  - c) SLV-3 apogee motor
  - d) None
- 2) What had the Maharaja of Khetri given Vivekananda ?
  - a) a copy of the Bhagwad Gita
  - b) money
  - c) a beautiful robe
  - d) none
- 3) On which day was the first session of the Parliament of Religion was scheduled to begin ?
  - a) on May 31, 1893
  - b) on September 11, 1893
  - c) on September 21, 1894
  - d) on May 31, 1894
- 4) To succeed in any mission, says Dr. Kalam, one needs
  - a) single handed victory
  - b) single minded devotion
  - c) single attempt success
  - d) single attempt failure
- 5) According to Nani Palkhivala, Dharma lives in the hearts of
  - a) plants
  - b) public men
  - c) temples
  - d) animals
- 6) What do you check to decide that a society is civilized ?
  - a) whether there is material progress
  - b) whether all the people have jobs
  - c) whether the people have freedom
  - d) whether the poorest are supported

**P.T.O.**



- 7) The words 'red slayer' indicate  
a) the murderer in red dress                      b) the red army of China  
c) the guards in red uniform                      d) the fighters race in Hindu
- 8) The poem 'Brahma' displays the influence of \_\_\_\_\_ on Emerson.  
a) the Ramayana    b) the Bible                      c) the Vedanta                      d) the Shakuntala
- 9) The term 'bubble house' refers to  
a) the moon                      b) the stars                      c) the mars                      d) the sun
- 10) The poet in 'Full Moon' gives expression to  
a) the feeling of pity for moon                      b) the feeling of joy for the scientists  
c) the feeling of joy for moon                      d) the feeling of joy for lovers
- 11) Ramesh is the \_\_\_\_\_ of all my friends.  
a) most childish    b) child                      c) most childly                      d) children
- 12) \_\_\_\_\_ must be germfree.  
a) The Childrens's                      b) The Children milk  
c) Children's milk                      d) Childrens milk
- 13) Prarthana succeeded in getting out of the \_\_\_\_\_ line.  
a) fired                      b) firing                      c) fiery                      d) fire
- 14) Though Nanda was in her \_\_\_\_\_ boat, she could use her smart phone.  
a) cell                      b) sale                      c) sail                      d) sell

2. Answer in brief **any seven** of the following :

14

- 1) How did Swami Vivekananda manage to reach Chicago ?
- 2) Why is the speech of Vivekananda called 'a tongue of flame' ?
- 3) What advice did Wernher von Braun give to Dr. Kalam ?
- 4) What picture of Dr. Kalam emerges from the essay ?
- 5) What does Nani Palkhivala say about freedom ?
- 6) What two rays of hope does Nani Palkhivala speak of ?
- 7) What is Kalam's opinion of Wernher von Braun ?
- 8) What is the Amnesty International ?



3. A) Write short answers on **any two** of the following : 8
- 1) Theme of the poem 'Full Moon'.
  - 2) What transition has taken place in approach to the moon ?
  - 3) What is the message of poem 'Brahma' to the readers ?
- B) Write short answers on **any two** of the following : 6
- 1) What are the essential features of notice ?
  - 2) Write a note on agenda.
  - 3) What is email ?
4. Write **any one** of the following : 14
- You are Deepak Waghmare, Secretary of Science Forum, Solapur. The well known scientist has agreed to visit the forum and interact with the students. Write a notice and agenda informing members of the forum. Imagine the necessary details.
- OR
- You have been selected as a Sales Officer in a company. You have received an email. Write an email letter accepting offer.
5. Prepare curriculum vitae of a science graduate who has applied for the position of Marketing Officer. 14
-



SLR-SZ – 11

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**B.Sc. (ECS) – I (Semester – II) (New CBCS) Examination, 2017**  
**Paper – II : INTRODUCTION TO WEB DESIGNING**

Day and Date : Wednesday, 15-11-2017

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *A figure to the right place indicates full marks.*

1. Choose the **correct** alternative.

**14**

- 1) Largest heading tag in HTML is  
a) <H7>                      b) <H1>                      c) <H6>                      d) <heading>
- 2) \_\_\_\_\_ is used to control the distance between two adjacent cells in table.  
a) Cellspacing      b) Cellpadding      c) Rowspan      d) Colspan
- 3) In CSS ID is created with  
a) #                                              b) %  
c) !                                              d) \$
- 4) \_\_\_\_\_ is not a companion tag.  
a) <B>                                              b) <HR>  
c) <PRE>                                              d) None of these
- 5) \_\_\_\_\_ is tag used to take the paragraph in the web page.  
a) <BLOCKQUOTE>                                              b) <PRE>  
c) <HR>                                              d) None of these
- 6) \_\_\_\_\_ of the following tag represents a section of the document intended for navigation in HTML5.  
a) footer                                              b) nav  
c) section                                              d) dialog

P.T.O.



- 7) Following code gives the output  
`<script type= "text/javascript">  
x = 4 + "4";  
document.write(x);  
</script>`
- a) 4.4                      b) 8                      c) 44                      d) Error output
- 8) What is mean by "this" keyword in JavaScript ?
- a) It refers current object  
b) It refers previous object  
c) It is variable which contains value  
d) None of the above
- 9) The current HTML5 draft specification does not specify which video formats browsers should support in the video tag. But most commonly used video formats are
- a) ogg                                              b) mpeg4  
c) Both a and b                                              d) None of the above
- 10) Which event is generated when a seek operation completes ?
- a) Seeking                                              b) Searched  
c) Suspend                                              d) Waiting
- 11) The specific area in the image is called as
- a) servermap      b) hotspot                      c) map                      d) location
- 12) \_\_\_\_\_ is the built in function of JavaScript which returns the position of character or substring from the main string.
- a) charAt( )                                              b) substring( )  
c) indexOf( )                                              d) None of these
- 13) \_\_\_\_\_ number of co-ordinates required for polygon for image map.
- a) 4                      b) 3                      c) 6                      d) None of these
- 14) \_\_\_\_\_ event takes place when the focus is removed from an element or window.
- a) onDbClick      b) focus                      c) load                      d) blur



2. Attempt **any seven** questions from the following : **14**
- 1) List the any four built in JavaScript functions.
  - 2) What is opacity ?
  - 3) What is floating ?
  - 4) What is Standalone tag ? Give any example.
  - 5) Write a syntax to declare array in JavaScript.
  - 6) What are the types of lists in HTML ?
  - 7) What is network topology ?
  - 8) What is selector, property and value in CSS ?
  - 9) What is Padding ?
3. A) Attempt **any two** questions from the following : **10**
- 1) Explain general structure of HTML.
  - 2) Write a program in JavaScript that to check the given number is Prime or not.
  - 3) Differentiate between LAN and WAN.
- B) What is Hyperlink ? Explain how to create internal and external hyperlink in HTML. **4**
4. Attempt **any two** questions from the following : **14**
- 1) What is CSS ? Describe all the types of CSS with suitable example.
  - 2) Explain Document Object Model (DOM) in JavaScript. Explain each object with example.
  - 3) Explain table tag with its attribute and suitable example.
5. Attempt **any two** questions from the following : **14**
- 1) Explain validation in JavaScript with suitable example.
  - 2) Explain audio and video tag with suitable example.
  - 3) What is frameset tag ? Explain frameset tag with example.





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**B.Sc. (E.C.S.) – I (Semester – II) Examination, 2017**  
**INTRODUCTION TO PROGRAMMING USING C – II (New CBCS)**  
**Paper – III**

Day and Date : Thursday, 16-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose **correct** alternatives : **14**

- 1) What is meant by 'a' in the following operation ?  
fp = fopen ("Random.txt", "a");  
A) Attach      B) Append      C) Amend      D) Add
- 2) Size of a union is determined by size of the  
A) First member in the union      B) Last member in the union  
C) Biggest member in the union      D) Sum of the sizes of all members
- 3) Which of the following is a correct format for declaration of function ?  
A) Return-type function-name (argument type);  
B) Return-type function-name (argument type){}  
C) Return-type (argument type) function-name;  
D) Both (A) and (B)
- 4) Text files can store only character data  
A) True      B) False
- 5) Which function gives the current position of the file ?  
A) fseek()      B) fsetpos()      C) ftell()      D) rewind()
- 6) Which of the following mode argument is used to truncate ?  
A) a      B) f      C) w      D) t



7) Function can return structure in 'C'.

A) True

B) False

8) A data structure that can store related information of different data types together is

A) Array

B) String

C) Structure

D) All of these

9) What is the output of this C code ?

```
void main()
{
    char*p = calloc(100, 1);
    p = "welcome";
    printf("%s\n", p);
}
```

A) Segmentation fault

B) Garbage

C) Error

D) Welcome

10) The main() is user defined function

A) True

B) False

11) Which one is used during memory deallocation in C ?

A) remove(p);

B) delete(p);

C) free(p);

D) terminate(p);

12) A structure member is generally accessed using the

A) address operator

B) dot operator

C) comma operator

D) ternary operator

13) #include is called

A) Preprocessor directive

B) Inclusion directive

C) File inclusion directive

D) None of the mentioned

14) \*ptr++ will add 1 to the value pointed by ptr

A) True

B) False

2. Answer **any seven** of the following :

14

1) Give the difference between local and global variables.

2) Write the syntax for getc() and putc().

Set P



- 3) Define self-referential structure.
  - 4) What is the difference between malloc() and calloc() ?
  - 5) How pointer is declared and initialize ?
  - 6) Define union and write the syntax for declaration of union.
  - 7) Write the syntax for file open.
  - 8) Define actual and formal parameters.
  - 9) What is difference between call by value and call by reference ?
3. A) Answer **any two** of the following : **10**
- 1) Explain various operations perform on a file.
  - 2) Explain array of structure with example.
  - 3) Explain the use of getw() and putw().
- B) Explain pointer to pointer. **4**
4. Attempt **any two** of the following : **14**
- 1) What are the differences between structure and union ?
  - 2) Write a program to calculate sun of digits using function recursion.
  - 3) Write a program to read integer numbers from user and store into the file “Number”, reopen and read the same file copy odd numbers into “odd” file and even numbers into “even” file.
5. Attempt **any two** of the following : **14**
- 1) What are the different storage classes ? Explain with example.
  - 2) How to pass structure to the function ? Explain with suitable example.
  - 3) Explain command line argument with the help of example.
-



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**B.Sc. (ECS) – I (Semester – II) (New) Examination, 2017  
(CBCS Pattern)  
ELECTRONICS (Paper – IV)  
Linear Electronics – II**

Day and Date : Friday, 17-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :** 1) **All** questions are **compulsory**.  
2) Figures to **right** indicate **full** marks.  
3) Draw circuit diagram **wherever** necessary.

1. Multiple choice questions :

14

- 1) MOSFET uses SiO<sub>2</sub> as \_\_\_\_\_
  - a) Conductor
  - b) Insulator
  - c) Semiconductor
  - d) Metal
- 2) PLA uses AND and \_\_\_\_\_ gates.
  - a) OR
  - b) NOT
  - c) NOR
  - d) NAND
- 3) Total phase shift for sustained oscillation is \_\_\_\_\_ degree.
  - a) 60
  - b) 180
  - c) 360
  - d) zero
- 4) JFET is \_\_\_\_\_ controlled device.
  - a) Voltage
  - b) Current
  - c) Power
  - d) Heat
- 5) In PAL choice for interconnection to only \_\_\_\_\_
  - a) OR
  - b) AND
  - c) NOT
  - d) AND, OR

P.T.O.



- 6) RTD is \_\_\_\_\_ sensor.
- |             |                |
|-------------|----------------|
| a) pressure | b) humidity    |
| c) PH       | d) temperature |
- 7) \_\_\_\_\_ is amplification factor of FET.
- |       |          |
|-------|----------|
| a) rd | b) Vm rd |
| c) gm | d) gm rd |
- 8) Active sensor are \_\_\_\_\_ device.
- |                   |                  |
|-------------------|------------------|
| a) External power | b) Self power    |
| c) No power       | d) None of these |
- 9) In colpitts oscillator \_\_\_\_\_ taped.
- |              |             |
|--------------|-------------|
| a) Capacitor | b) Inductor |
| c) Resistor  | d) Coil     |
- 10) Thermistor is \_\_\_\_\_ temp coefficient resistance.
- |                 |                  |
|-----------------|------------------|
| a) Positive     | b) Negative      |
| c) Both a and b | d) None of these |
- 11) \_\_\_\_\_ is subfamily of TTL.
- |        |         |
|--------|---------|
| a) LS  | b) DTL  |
| c) RTL | d) RCTL |
- 12) Transducer convert \_\_\_\_\_ quantity into \_\_\_\_\_ quantity.
- |                         |                           |
|-------------------------|---------------------------|
| a) Physical, Physical   | b) Physical, Mechanical   |
| c) Physical, Electrical | d) Electrical, Electrical |
- 13) Fan out of TTL IC family is up to
- |       |       |
|-------|-------|
| a) 2  | b) 10 |
| c) 20 | d) 40 |
- 14) Flip flops are used in
- |        |         |
|--------|---------|
| a) PLA | b) FPLA |
| c) PAL | d) PLD  |



2. Answer **any seven** of the following : **14**
- 1) Write difference between JFET and MOSFET.
  - 2) Define accuracy and resolution.
  - 3) Explain propagation delay.
  - 4) Give difference between ac and dc motors.
  - 5) Write sub families of TTL family.
  - 6) Define oscillator and feedback.
  - 7) Write applications of sensor.
  - 8) What is mean by semicustom IC ?
  - 9) Explain concept of bistable multivibrator.
3. A) Write short note on **any two** of the following : **14**
- 1) Explain depletion type MOSFET.
  - 2) Explain temperature sensor RTD.
  - 3) Explain PLA.
- B) Explain crystal oscillator.
4. Attempt **any two** of the following : **14**
- 1) Explain astable and mono stable multivibrator using IC 555.
  - 2) Explain Humidity and PH sensors.
  - 3) Explain programmable logic devices.
5. Attempt **any two** of the following : **14**
- 1) Explain depletion and enhancement type mosfet.
  - 2) Explain transducers and thermocouple.
  - 3) Explain SMD and multilayer PCB.
-



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**B.Sc. (ECS) – I (Semester – II) (New) (CBCS) Examination, 2017  
DIGITAL ELECTRONICS AND MICROPROCESSOR – II (Paper – V)**

Day and Date : Saturday, 18-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right place indicate full marks.**  
3) **Neat diagram must be drawn wherever necessary.**

1. Choose **correct** alternatives: **14**

- 1) \_\_\_\_\_ interrupts has highest priority.  
a) Trap                      b) RST 7.5                      c) RST 6.5                      d) RST 5.5
- 2) Memory size is indicated in  
a) GB                                              b) KHz  
c) HB                                              d) None of these
- 3) To design SRAM \_\_\_\_\_ are used.  
a) Electrical Cells                                              b) Flip/Flop  
c) Capacitor                                              d) None of these
- 4) The address bus of 8085 microprocessor is  
a) 20 bit                      b) 8 bit                      c) 16 bit                      d) 24 bit
- 5) The information stored in ROM are we can  
a) Only write                                              b) Only read  
c) Read and write                                              d) None of these
- 6) In binary weighted register network \_\_\_\_\_ values resistance are use.  
a) Same                                              b) Different  
c) Two                                              d) None of these



- 7) The phase shift of integrator is \_\_\_\_\_ used in dual slope converter.  
a) 0                                    b) 90                                    c) 180                                    d) 360
- 8) The HLT is \_\_\_\_\_ type of instruction.  
a) Data transfer                                    b) Arithmetic  
c) Logical                                    d) Machine control
- 9) \_\_\_\_\_ is the fastest ADC.  
a) SAR                                    b) Dual slope  
c) R-2R                                    d) None of these
- 10) \_\_\_\_\_ is a maskable interrupt.  
a) Trap                                    b) INTR  
c) RESET                                    d) None of these
- 11) The \_\_\_\_\_ microprocessor is a 8 bit microprocessor.  
a) 8086                                    b) 8088  
c) 8085                                    d) 4004
- 12) STA 2250 is the \_\_\_\_\_ type of instruction.  
a) Data transfer                                    b) Arithmetic  
c) Logical                                    d) Machine control
- 13) \_\_\_\_\_ Pin in 8085 used as + power supply.  
a) 20                                    b) 40                                    c) 1                                    d) 21
- 14) JMP is a \_\_\_\_\_ Type instruction.  
a) Branch                                    b) Arithmetic  
c) Logical                                    d) Machine control

2. Attempt **any seven** of the following :

14

- 1) State different types of instruction SET.
- 2) Write ASM program for addition of two 8 bit numbers for 8085.
- 3) Give applications of ADC.

Set P





- 4) Give parameters of memory.
  - 5) Give different type of data converter.
  - 6) Explain instruction format for 8085 microprocessors.
  - 7) Explain EPROM.
  - 8) Explain instruction cycle in 8085.
  - 9) Explain parameters of DAC.
3. A) Attempt **any two** of the following : **10**
- 1) State and explain different addressing modes used in 8085.
  - 2) Explain different data transfer instructions.
  - 3) Explain Successive approximation register ADC.
- B) Explain different types of RAM. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain R-2R ladder network.
  - 2) Explain diode matrix ROM.
  - 3) Explain flag registers used in 8085 microprocessor.
5. Attempt **any two** of the following : **14**
- 1) Explain interfacing methods used in 8085 microprocessor.
  - 2) Explain with suitable diagram dual slope ADC.
  - 3) Draw internal architecture of 8085. Explain general registers used in 8085 microprocessor.
-



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**B.Sc. (ECS) – I (Semester – II) (New CBCS) Examination, 2017**  
**MATHEMATICS (Paper – VI)**  
**Mathematical Algebra**

Day and Date : Monday, 20-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- N.B. :** 1) *All questions are compulsory.*  
2) *Use of scientific calculator is allowed.*  
3) *Figures to the right indicate full marks.*

1. Choose the **correct** alternative.

**14**

- 1) The converse of statement  $p \rightarrow q$  is  
a)  $p \leftrightarrow q$       b)  $q \rightarrow p$       c)  $\sim p \rightarrow \sim q$       d)  $\sim q \rightarrow \sim p$
- 2) If  $a * b = b * a$  for  $a, b \in A$ , then operation  $*$  is called as  
a) Commutative    b) Associative    c) Distributive    d) None of these
- 3) If  $x R y$  and  $y R x$  then relation  $R$  is called as  
a) Symmetric      b) Asymmetric  
c) Antisymmetric    d) Equivalence
- 4) If  $f(x) = x^3 + 2x^2 - 5x$  then  $f(3)$   
a) 20      b) 15      c) 30      d) -30
- 5) If  $z = 1 - i$  then modulus of  $z$  is  
a)  $\sqrt{-2}$       b)  $\sqrt{2}$       c) 2      d) -2
- 6) If  $p_1, p_2, p_3 \vdash q$ , then statement  $q$  is known as  
a) Conclusion    b) Premise    c) Hypothesis    d) None of these
- 7) A function  $f$  from  $A$  to  $B$  then  $B$  is called as  
a) Domain      b) Co-domain    c) Image.      d) None of these

P.T.O.



- 8) The imaginary part of complex number  $8 - 4i$  is  
a)  $4i$                       b)  $-4i$                       c)  $8$                       d)  $-4$
- 9) The least positive number for which statement  $n! \geq 2^n$  is true is  
a)  $2$                       b)  $3$                       c)  $4$                       d)  $5$
- 10) If statements  $p$  and  $q$  are true,  $r$  is false then truth value of  $\sim [(p \wedge q) \rightarrow \sim r]$  is  
a) True                      b) False  
c) Neither true nor false                      d) None of these
- 11) The range of function is subset of its  
a) Co-domain      b) Domain                      c) Power set      d) None of these
- 12) If  $x R y$  and  $y R x \Rightarrow x = y$ , then relation  $R$  is called as  
a) Symmetric                      b) Asymmetric  
c) Antisymmetric                      d) Equivalence
- 13) Disjunction of the statements  $p$  and  $q$  are false if both the statements are  
a) True                      b) False  
c) True and false                      d) True or false
- 14) If there exist an element  $e \in A$  such that  $a * e = e * a = a \forall a \in A$ , then  $e$  is called as \_\_\_\_\_ element w.r.t. binary operation  $*$   
a) Identity                      b) Inverse                      c) Binary                      d) None of these

2. Attempt **any seven** of the following :

**14**

- 1) Define modulus and argument of complex number.
- 2) State the first principle of finite induction.
- 3) If  $A = \{l, m, n\}$   $B = \{p, q, r, s\}$  find  $A \times B$ .
- 4) Prepare the truth table of  $p \rightarrow (q \wedge \sim p)$ .
- 5) Define one-one function.
- 6) Let  $A = \{x, y, z, w\}$   $R = \{(x, x), (x, y), (z, z), (z, w), (w, x), (w, z)\}$  be relation defined on set  $A$ . Draw the diagram of relation  $R$ .



- 7) Express the complex number  $z = 1 + \sqrt{3}i$  in polar form.
- 8) If  $*$  is binary operation defined on  $z$  by  $a * b = a - b \forall a, b \in z$ . Determine whether  $*$  is associative or not.
- 9) Define tautology and contradiction.

3. A) Attempt **any two** of the following : **10**

- 1) Prove that  $[(p \rightarrow q) \wedge \sim q] \rightarrow \sim p$  is tautology.
- 2) Determine whether the following operation  $*$  defined on  $Q$  by,

$$a * b = \frac{ab}{2} \forall a, b \in Q \text{ is}$$

- 1) Commutative
  - 2) Associative
  - 3) Is the identify element exist ?
  - 4) Find inverse of element in  $Q$ .
- 3) If  $z_1 = -5 + 4i, z_2 = 3 + 2i$  find

- 1)  $z_1 + z_2$
- 2)  $z_1 - z_2$
- 3)  $z_1 \cdot z_2$
- 4)  $\frac{z_1}{z_2}$

B) If  $f(x) = \frac{7x-20}{13}$  is function  $f : R \rightarrow R$ . Show that  $f(x)$  is one-one (injective). **4**

4. Attempt **any two** of the following : **14**

- 1) Using principle of finite induction prove that,

$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + \frac{1}{3 \times 4} + \dots + \frac{1}{n(n+1)} = \frac{n}{n+1}, \forall n \geq 1$$

- 2) Test the validity by using truth table,  $(p \vee \sim q), \sim p, r \rightarrow q \vdash \sim r$ .



- 3) \* is binary operation defined on set A, where  $A = \{a, b, c, d, e\}$  given by following multiplication table.

| * | a | b | c | d | e |
|---|---|---|---|---|---|
| a | d | e | a | b | c |
| b | e | a | b | c | d |
| c | a | b | c | d | e |
| d | b | c | d | e | a |
| e | c | d | e | a | b |

Find :

- 1)  $(a * b) * (d * e)$
- 2)  $a * (b * d)$
- 3) Is \* is commutative
- 4) Find identify element w.r.t. \*, if exist
- 5) Find inverse of each element in A.

5. Attempt **any two** of the following :

14

- 1) Let  $A = \{a, b, c, d\}$  and relation R is defined on set A is  $R = \{(a, a), (a, d), (b, b), (d, c), (c, d), (d, a)\}$  compute the transitive closure of R by Wharshall's algorithm.
- 2) Prove that
  - 1)  $p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r)$
  - 2)  $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$
- 3) Define conjugate of complex number  $z = a + bi$  find real part and imaginary

part of complex number,  $z = \left( \frac{3-2i}{2+3i} \right)^2$ .

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Set **P**

**B.Sc. (ECS) – I (Semester – II) (New) (CBCS Pattern) Examination, 2017**  
**MATHEMATICS (Paper – VII)**  
**Operations Research**

Day and Date : Tuesday, 21-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions. :**
- 1) **All questions are compulsory.**
  - 2) **Figures to the right indicate full marks.**
  - 3) **Use of scientific calculator is allowed.**
  - 4) **Graph paper will be provided if necessary.**

1. Choose the **correct** alternative. **14**

- 1) The coefficient of slack variable in the objective function of maximisation type LPP is
  - a) 0
  - b)  $-M$
  - c)  $+M$
  - d)  $S_1$
- 2) The LPP is said to be in \_\_\_\_\_ form if the objective function is of maximise type and all the constraints, except non negative constraints are of  $\leq$  type
  - a) Standard
  - b) General
  - c) Normal
  - d) Canonical
- 3) In the graphical method, the LPP has no solution only when the feasible region
  - a) does not exists
  - b) is bounded polygon
  - c) is un-bounded
  - d) none of these

P.T.O.



- 4) IBFS of a T.P. is \_\_\_\_\_ optimum solution of T.P.
- a) Equal to
  - b) Always less than
  - c) Less than or equal to
  - d) Greater than
- 5) The general objective of T.P. is to \_\_\_\_\_ the total transportation cost.
- a) Maximise
  - b) Stabilize
  - c) Minimise
  - d) Maximise upto infinity
- 6) If in a un-balanced T.P.  $\sum a_i < \sum b_j$  then we have to \_\_\_\_\_ in order to balance it.
- a) Add a dummy column
  - b) Add a dummy row
  - c) subtract a dummy row
  - d) Subtract a dummy column
- 7) \_\_\_\_\_ method is used to solve A.P.
- a) North-West corner
  - b) Least cost
  - c) U-V method
  - d) None of these
- 8) A.P. is said to be balanced if
- a)  $\sum a_i = \sum b_j$
  - b) Number of rows  $\neq$  number of columns
  - c)  $\sum a_i \neq \sum b_j$
  - d) Number of rows = number of columns
- 9) If in a primal LPP there are 3 constraints and 4 variables then its dual LPP has \_\_\_\_\_ variables and \_\_\_\_\_ constraints respectively.
- a) 3, 4
  - b) 3, 3
  - c) 4, 3
  - d) 4, 4



- 10) In the optimality test of T.P. if all the values of opportunity costs are greater than zero then solution under test is
- a) Optimum and unique
  - b) Not optimum
  - c) IBFS
  - d) Alternate optimum
- 11) Opportunity cost for un-occupied cell is
- a) Always 0
  - b)  $c_{ij} = u_i + v_j$
  - c)  $d_{ij} = c_{ij} - (u_i + v_j)$
  - d) Cannot be calculated
- 12) In simplex method, if all the entries in the entering variable column are  $\leq 0$  then the LPP passes \_\_\_\_\_ solutions.
- a) No
  - b) Infinitely many
  - c) Unbounded
  - d) Unique
- 13) While solving A.P. we arrive at optimum solution if
- a) All  $d_{ij} \geq 0$
  - b) Number of rows = number of columns
  - c) Number of rows  $\neq$  number of columns
  - d) Number of assignments made = number of rows or columns
- 14) The objective of solving the maximisation type A.P. is
- a) To minimise the total cost
  - b) To maximise the total profit
  - c) To stabilise the total profit
  - d) To many any assignments





2. Attempt **any seven** of the following :

14

- 1) Define standard form of LPP.
- 2) Define slack variable in LPP.
- 3) Define decision variable in LPP.
- 4) When we arrive at optimum solution in T.P. and in A.P.?
- 5) Define un-balanced T.P.
- 6) Give the assignments for the following final reduced A.P. Also write the assignments made.

$$\begin{array}{c}
 J_1 \quad J_2 \quad J_3 \quad J_4 \\
 M_1 \begin{bmatrix} 0 & 15 & 0 & 6 \end{bmatrix} \\
 M_2 \begin{bmatrix} 7 & 0 & 9 & 10 \end{bmatrix} \\
 M_3 \begin{bmatrix} 0 & 0 & 8 & 14 \end{bmatrix} \\
 M_4 \begin{bmatrix} 0 & 0 & 6 & 0 \end{bmatrix}
 \end{array}$$

- 7) Write the names of methods to find IBFS of a T.P.
- 8) Convert the following LPP into standard form.

$$\text{Maximise } Z = 2x + 5y + 7z$$

$$\text{Subject to } x + y + z \leq 7;$$

$$3x + 2y + 4z \leq 9;$$

$$4x + y + 3z \leq 5;$$

$$x, y, z \geq 0$$

- 9) Define non-degenerate solution of a  $m \times n$  T.P.



3. A) Attempt **any two** of the following : 10

- 1) Write a brief note on degeneracy in T.P.
- 2) Solve the following LPP by using graphical method.

Maximise  $Z = 45x + 65y$

Subject to  $6x + 4y \leq 120;$

$3x + 10y \leq 180;$

$x, y \geq 0$

3) Solve the following A.P. to minimise the cost.

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | P | Q | R | S | T |
| A | 6 | 2 | 5 | 2 | 6 |
| B | 2 | 5 | 8 | 7 | 7 |
| C | 7 | 8 | 6 | 9 | 8 |
| D | 6 | 2 | 3 | 4 | 5 |
| E | 9 | 3 | 8 | 9 | 7 |
| F | 4 | 7 | 4 | 6 | 8 |

B) Write difference between T.P. and A.P. 4

4. Attempt **any two** of the following : 14

1) Find IBFS of the following T.P. by using least cost method.

|               | $W_1$ | $W_2$ | $W_3$ | $W_4$ | Capacity |
|---------------|-------|-------|-------|-------|----------|
| $F_1$         | 5     | 2     | 4     | 3     | 22       |
| $F_2$         | 4     | 8     | 1     | 6     | 15       |
| $F_3$         | 4     | 6     | 7     | 5     | 18       |
| <b>Demand</b> | 7     | 12    | 17    | 19    |          |



2) Solve the following LPP by using simplex method.

$$\text{Maximise } Z = 3x + 2y + 5z$$

$$\text{Subject to } x + 2y + z \leq 430;$$

$$3x + 2z \leq 460;$$

$$x + 4y \leq 120;$$

$$x, y, z \geq 0$$

3) Write an algorithm to solve A.P. by using Hungarian Method.

5. Attempt **any two** of the following :

14

1) Solve the following A.P. to maximise the profit.

|   |    |    |     |     |    |
|---|----|----|-----|-----|----|
| A | B  | C  | D   | E   |    |
| P | 62 | 78 | 50  | 101 | 82 |
| Q | 71 | 84 | 61  | 73  | 59 |
| R | 87 | 92 | 111 | 71  | 81 |
| S | 48 | 64 | 87  | 77  | 80 |

2) Find IBFS of the following T.P. by using VAM.

|                | D <sub>1</sub> | D <sub>2</sub> | D <sub>3</sub> | D <sub>4</sub> | Supply |
|----------------|----------------|----------------|----------------|----------------|--------|
| O <sub>1</sub> | 6              | 5              | 8              | 5              | 30     |
| O <sub>2</sub> | 5              | 11             | 9              | 7              | 40     |
| O <sub>3</sub> | 8              | 9              | 7              | 13             | 50     |
| Demand         | 35             | 28             | 32             | 25             |        |



3) Define Canonical form of LPP. Write dual of the following LPP.

$$\text{Minimise } Z = 2x_1 + 3x_2 + x_3$$

$$\text{Subject to } x_1 + 2x_2 + 3x_3 \geq 4;$$

$$3x_2 + x_3 \geq 2;$$

$$2x_1 + 5x_2 \geq 3;$$

$$3x_1 + x_2 + 3x_3 \geq 1;$$

$$x_1, x_2, x_3 \geq 0$$

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**B.Sc. (ECS) (Part – I) (Semester – II) (New CBCS – Pattern)  
Examination, 2017  
DESCRIPTIVE STATISTICS – II (Paper – VIII)**

Day and Date : Wednesday, 22-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**Instructions :** i) *All questions are compulsory.*  
ii) *Figures to right indicate full marks.*  
iii) *Use of any type of calculator is allowed.*

1. Select **most correct** alternative.

**14**

- 1) If all the points in scatter diagram are lie on a falling straight line, then there is \_\_\_\_\_ correlation.
- a) –ve                                              b) Perfect –ve  
c) High degree –ve                              d) None of these
- 2) The covariance between a variable and a constant is \_\_\_\_\_ always.
- a) +ve                                              b) –ve  
c) may be +ve or –ve                              d) zero
- 3) Spearman's rank correlation coefficient is
- a) Karl Pearson's coefficient of correlation between in the ranks  
b) Useful for the qualitative data  
c) Lies between –1 and +1  
d) All of these
- 4) If  $u = 4x + 10$  and  $v = 8y + 20$ , then
- a)  $r_{xy} = r_{uv}$                                               b)  $r_{xy} > r_{uv}$   
c)  $r_{xy} < r_{uv}$                                               d) None of these

P.T.O.



- 5) If regression coefficients are –ve, then correlation between two variables is
- a) –ve
  - b) +ve
  - c) +ve or –ve
  - d) None of these
- 6) It possible that two regression coefficients have
- a) Opposite signs
  - b) Same signs
  - c) No signs
  - d) Difficult to say
- 7) The lines of regression are intersects at point
- a)  $(x, y)$  where  $x$  and  $y$  are any real numbers
  - b)  $(0, 0)$
  - c)  $(\bar{X}, \bar{Y})$
  - d) None of these
- 8) Multiple regression equation has
- a) Only one dependent variable
  - b) More than one dependent variables
  - c) Only one independent variable
  - d) None of these
- 9) The correlation between a variable and its estimated value given by the plane of regression is called
- a) Total correlation
  - b) Multiple correlation
  - c) Partial correlation
  - d) Non-linear correlation
- 10) Periodic variations in time series with period of repetition is less than one year is known as \_\_\_\_\_ variation.
- a) Seasonal
  - b) Cyclical
  - c) Random
  - d) All of these
- 11) The variation in time series due to such causes that are beyond the control of human hand is the
- a) Trend
  - b) Seasonal variation
  - c) Cyclical variation
  - d) Random variation
- 12) \_\_\_\_\_ index number is considered as ideal one.
- a) Laspeyre's
  - b) Paasche's
  - c) Fisher's
  - d) All of these



- 13) If all items are equally important, then index numbers are called
  - a) Weighted
  - b) Unweighted
  - c) Item index
  - d) None of these
- 14) Moving average method
  - a) Does not provides trend values for all time periods
  - b) Is not useful for prediction purpose
  - c) (a) and (b) both
  - d) None of these

2. Attempt **any seven** of the following : **14**

- 1) Define – Negative correlation.
- 2) State components of time series.
- 3) State formula for  $r_{12.3}$  in terms  $r_{12}$ ,  $r_{13}$  and  $r_{23}$ .
- 4) Define – Index number.
- 5) Given :  $Cov(X, Y) = -15$ ,  $Var(X) = 441$ ,  $Var(Y) = 484$  Find  $r_{xy}$ .
- 6) Given :  $Cov(X, Y) = -15$ , S.D. of X and Y are 11 and 7 respectively. Find  $b_{yx}$ .
- 7) Given :  $\sum p_1q_1 = 120$ ,  $\sum p_0q_1 = 105$  and  $\sum p_0q_0 = 90.5$  . Find appropriate quantity index number.
- 8) The equations of lines of regression Y on X is  $3.5 Y + 5X = 60$ . Find  $b_{yx}$ .
- 9) Given :  $r_{12} = r_{13} = r_{23} = 0.6$  find  $R_{1.23}$ .

3. A) Attempt **any two** of the following : **10**

- 1) Given :  $n = 10$ ,  $\sum X = \sum Y = 120$ ,  $\sum X^2 = 1600$ ,  $\sum Y^2 = 1750$ ,  $\sum XY = 1125$  . Find product moment correlation coefficient between X and Y.
- 2) Find price index number for 2008 by simple average of relatives method. Interprets the result.

|               |    |    |    |    |
|---------------|----|----|----|----|
| Price in 2007 | 48 | 55 | 40 | 31 |
| Price in 2008 | 60 | 75 | 35 | 48 |

- 3) Given :  $\bar{X} = 14$ ,  $\bar{Y} = 25$ ,  $Cov(X, Y) = 34.5$ ,  $\sum X^2 = 2561$ ,  $n = 10$  . Obtain equation of line of regression Y on X and hence estimate Y for  $X = 25$ .

B) Explain selection of base period in construction of index number. **4**



4. Attempt **any two** of the following :

14

- 1) Given :  $\bar{X}_1 = \bar{X}_2 = 55, \bar{X}_3 = 60, \sigma_1 = 12, \sigma_2 = \sigma_3 = 14, r_{12} = r_{13} = r_{23} = 0.8$  .  
Obtain equation of plane of regression  $X_3$  on  $X_1$  and  $X_2$ , estimate  $X_3$  for  $X_1 = 60$  and  $X_2 = 65$ .
- 2) Compute 4 yearly centered moving averages for the following time series.

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|------|------|------|------|------|------|------|------|------|
| Sale | 15   | 18   | 20   | 27   | 23   | 26   | 29   | 30   | 28   |

- 3) Define regression coefficients and state properties of it.

5. Attempt **any two** of the following :

14

- 1) Find Paasche's price and quantity index numbers for the year 2004.

| Commodity | 2003  |          | 2004  |          |
|-----------|-------|----------|-------|----------|
|           | Price | Quantity | Price | Quantity |
| A         | 50    | 4        | 70    | 3        |
| B         | 40    | 2.5      | 45    | 3        |
| C         | 35    | 3        | 65    | 2        |
| D         | 125   | 1.5      | 120   | 2.5      |

- 2) Fit second degree curve  $Y = a + bX + cX^2$  to the following data and hence estimate Y for X = 30.

| X | 5  | 10  | 15  | 20  | 25  |
|---|----|-----|-----|-----|-----|
| Y | 60 | 160 | 310 | 510 | 760 |

- 3) Define time series. Explain moving average method of estimating trend.

\_\_\_\_\_





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**B.Sc. (ECS) (Part – I) (Semester – II) (New CBCS Pattern)**  
**Examination, 2017**  
**PROBABILITY THEORY – II (Paper – IX)**

Day and Date : Thursday, 23-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- Instructions :** i) **All questions are compulsory.**  
ii) **Figures to right indicate full marks.**  
iii) **Use of any type of calculator is allowed.**

1. Select most **correct** alternative :

14

- 1) The joint p.m.f. of bivariate r.v. (X, Y) is  
 $P(x, y) = k(x^2 + y^2)$ , for  $k > 0$  and  $X = -1, 1, Y = -2, 2$ . Then value of constant k is  
a)  $1/20$                       b)  $5/20$                       c)  $4/20$                       d)  $6/20$
- 2) If X is continuous r.v. with probability density function  $f(x)$  then,  $\int_{-\infty}^{\infty} f(x) dx$  is  
a) 0                              b) -1                              c) 1                              d) None of these
- 3) If  $X \rightarrow U[a, b]$  then  
a)  $P(a \leq X \leq b) = 1$                       b)  $P(X \leq b) = 1$   
c)  $P(X > b) = 0$                               d) All of these
- 4) If  $X \rightarrow \text{Exp}(\theta)$  then distribution function  $F(x)$  is  
a)  $1 - e^{-x/\theta}$                       b)  $1 - e^{x/\theta}$                       c)  $e^{-x/\theta}$                       d) None of these
- 5) If  $X \rightarrow N(80, 20)$  then median of X is  
a) 80                              b) 100                              c) 20                              d) 60



- 6) Testing  $H_0 : \mu_1 = \mu_2$  against  $H_1 : \mu_1 \neq \mu_2$
- a) One sided left tailed test      b) One sided right tailed test  
c) Two sided test      d) None of these
- 7) If a continuous r.v.  $X$  follows an exponential distribution with mean 5, then  $\text{Var} (X) =$
- a) 5      b) 10      c) 15      d) 25
- 8) In testing of hypothesis, whether the test is one sided or two sided depends on
- a) Null hypothesis      b) Alternative hypothesis  
c) Simple hypothesis      d) All of these
- 9) Bivariate discrete r.v.  $(X, Y)$  has  $E (X, Y) = 3.2$   $E (X) = 2$  and  $E (Y) = 1.6$  then r.v.'s  $X$  and  $Y$  are
- a) Dependent      b) Independents  
c) Related      d) None of these
- 10) If  $X$  is continuous r.v. with p.d.f.  $f(x)$ , then mean of  $X$  is
- a)  $\int_0^{\infty} X f(x)dx$       b)  $\int_{-\infty}^0 X f(x)dx$   
c)  $\int_{-\infty}^{\infty} X f(x)dx$       d) All of these
- 11) If  $X \rightarrow U [4, 8]$  then mean of r.v.  $X$  is
- a) 4      b) 8      c) 12      d) 6
- 12) If  $X \rightarrow N (\mu, \sigma^2)$ , then  $Z \rightarrow N (0,1)$ , where  $Z =$
- a)  $\frac{x - \mu}{\sigma}$       b)  $\frac{(x - \mu)^2}{\sigma^2}$       c)  $\frac{(x - \mu)}{\sigma^2}$       d) None of these
- 13) If  $X_1 \rightarrow N (10, 4)$  &  $X_2 \rightarrow N(1, 2, 9)$  are independent random variables, then distribution of  $(X_1 + X_2)$  is
- a)  $N(22, 13)$       b)  $N(22, 4)$       c)  $N(22, 9)$       d) None of these
- 14) If  $X$  is continuous r.v. with p.d.f.  $f(x)$  then  $\int_{-\infty}^{\infty} X^2 f(x) dx$  is
- a)  $[E (X)]^2$       b)  $V (X)$   
c)  $V (X) + [E (X)]^2$       d) None of these



2. Attempt **any seven** of the following : 14

- 1) Define joint p.m.f. of two dimensional discrete r.v. (X ; Y).
- 2) If X is continuous r.v. with p.d.f.  $f(x) = 3x^2$ , if  $0 \leq X \leq 1$ . Find  $E(X)$ .
- 3) Define exponential distribution.
- 4) If  $X \rightarrow U[0, 10]$ , then find  $P[2 \leq X \leq 7]$ .
- 5) Define type – I and type – II error.
- 6) Define Mathematical expectation of continuous r.v. X.
- 7) The joint p.m.f. of (X ; Y) is  
$$P(X ; Y) = \frac{(2X + 3Y)}{24}$$
, if  $X = 1, 2$  and  $Y = 0, 2$   
Find marginal probability distribution of X.
- 8) State any two properties of normal distribution.
- 9) If  $X \rightarrow U[a, b]$  with mean 1 and variance 3 determine a and b.

3. A) Attempt **any two** : 10

- 1) Define distribution function of continuous r.v. of X. State important properties of it.
- 2) The life time in hours of electric bulb follows an exponential distribution with distribution function  $F(x) = 1 - e^{-0.004x}$ ,  $x \geq 0$ , what is the probability that bulb will be survive more than 200 hours ?
- 3) The joint p.m.f. of (X ; Y) is  
 $P(x, y) = k(5x + 3y)$ , if  $X = 1, 2, 3$  &  $Y = 0, 1, 2$   
Find k, hence obtain  $P(X = 3 | Y = 2)$ .

B) Define probability density function of a continuous r.v. X. Verify whether following function is p.d.f. 4

$$f(x) = 2, \text{ if } 0 \leq X \leq \frac{1}{2}$$
$$= 0 \text{ otherwise}$$

Set P



4. Attempt **any two** of the following :

14

- 1) Write the test procedure for testing equality of two population means.
- 2) Suppose the life of an automobile battery follows exponential distribution with average life 1000 days. What is the probability that such a battery will work
  - i) More than 1200 days
  - ii) Between 500 to 800 days.
- 3) A fair coin is tossed 400 times. Using normal approximation find the probability of getting
  - i) Number of heads between 180 and 215
  - ii) Number of heads less than 185.Given  $P(Z > 2) = 0.02275$  &  $P(Z > 1.5) = 0.066087$ .

5. Attempt **any two** of the following :

14

- 1) Define uniform distribution. Find its mean and variance.
  - 2) In random sample of 800 persons from rural area 200 were found to be smokers. In random sample of 1000 persons from urban area 350 were found to be smokers. Test whether the proportions of smokers is same for both the populations at 5% level of significance.
  - 3) A continuous r.v.  $X$  has probability density function.
$$f(x) = \begin{cases} 6x(1-x), & \text{if } 0 \leq X \leq 1 \\ 0 & \text{otherwise} \end{cases}$$
Find :
    - i)  $P(X < 0.5)$
    - ii)  $P(0.3 < X < 0.6)$ .
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**SLR-SZ – 19**

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**B.Sc. – I (Semester – II) (ECS) (CGPA) Examination, 2017  
Paper – I : ENGLISH – II (Comp.) (Old)  
On Track : English Skills For Success**

Day and Date : Tuesday, 14-11-2017

Max. Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

1. Complete the following statements by choosing the correct alternatives from those given below them :

**14**

- 1) The word 'workaholic' means
  - a) a person who works hard
  - b) a person who works slowly and slowly
  - c) a person who does not work
  - d) a person who runs away from work
- 2) Wernher von Braun made the lethal
  - a) SLV-3
  - b) V-2
  - c) V-3
  - d) V-11
- 3) The first session of Parliament of Religion was held on
  - a) 11 September 1893
  - b) 11 October 1893
  - c) 11 September 1993
  - d) 11 December 1893
- 4) \_\_\_\_\_ represented the Buddhists of Ceylon in Parliament of Religion.
  - a) Pratap Muzoomdar
  - b) Gandhi
  - c) Dharmapala
  - d) None
- 5) What is the vanishing act Palkhivala writes about
  - a) The removal of poverty
  - b) The disappearance of law and order
  - c) The removal of discrimination
  - d) The disappearance of dissenters

**P.T.O.**



- 6) The primary idea of human rights involves  
a) rights against the government    b) rights of the government  
c) rights for the government        d) rights formulated by the government
- 7) Ralph Emerson was also a advocate of  
a) The superstition                    b) The transcendentalism  
c) The western style                  d) None
- 8) Ralph Emerson was \_\_\_\_\_ poet.  
a) An American    b) An Indian    c) An English    d) The French
- 9) The word 'bubble house' in 'Full Moon' means  
a) The Sun            b) The Moon    c) The Earth    d) The Sky
- 10) As the time passed, our perception of the moon has  
a) Changed                                b) Remained as it was  
c) Disturbed people                    d) None
- 11) This is the final \_\_\_\_\_ of the items.  
a) List                    b) Least                c) Lest                    d) Little
- 12) Mr. Padolkar congratulated Raju for his  
a) Princeple            b) Principles        c) Prencipal            d) Principale
- 13) Mrs. Bhujade cannot drink \_\_\_\_\_ coffee without your company.  
a) Her                    b) His                    c) Their                  d) Your
- 14) The correct antonym of 'expensive' is  
a) best                    b) chief                  c) poor                    d) cheap

2. Answer in brief **any seven** of the following :

**14**

- 1) What kind of a personality was Wernher von Braun, according to Dr. Kalam ?
- 2) What is 'flow' according to Dr. Kalam ?
- 3) How did J. H. Wright help Swami Vivekananda ?
- 4) How did Swami Vivekanand begin his speech in Chicago ?
- 5) What is the noble maxim by Palkhivala ?
- 6) Why does Palkhivala say that the world continues to be 'less than half free' ?
- 7) Write a note on Dr. Kalam as scientist.
- 8) What happened to the first V-2 missile when it was first tested ?

**Set P**



3. A) Write short answers on **any two** of the following : **8**
- 1) What is the message of the poem 'Brahma' ?
  - 2) How does Hayden lament over the Moon's fate ?
  - 3) Explain in short the concept of 'Brahma' by Emerson in the poem 'Brahma'.
- B) Write paragraphs on **any two** of the following : **6**
- 1) As a Principal of College, write a notice informing students about poetry reading competition. Mention date and events.
  - 2) What do you mean by minutes ?
  - 3) What is an agenda ?
4. Answer **any one** of the following questions : **14**
- A) You are Dr. Balkrishnan, Secretary of Himalaya Academy. The well known speaker has been called to guide students who prepare for competitive examinations. Write a notice and agenda informing members of the academy. Imagine necessary details.
- B) You have received an e-mail letter of appointment for the post of Bank Manager in D.B.N. Cooperative Bank, Pune. Write an email letter accepting the offer.
5. Prepare a C.V. for the post of Assistant Sales Executive in a renowned company. **14**
-



SLR-SZ – 20

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**B.Sc. (ECS) – I (Semester – II) (Old) (CGPA Pattern) Examination, 2017**  
**COMPUTER SCIENCE (Paper – II)**  
**Computer Fundamentals and Programming Using C – II**

Day and Date : Wednesday, 15-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

SECTION – I  
(Computer Fundamentals)

1. Choose **correct** alternatives: 5

1) \_\_\_\_\_ tag is used for paragraph.

- A) </P>                      B) <Para>                      C) <P>                      D) <paragraph>

2) Multiple computers are connected to each other is called as

- A) Network                      B) Connection  
C) Hub                      D) Switch

3) \_\_\_\_\_ extension is used for word documents.

- A) .txt                      B) .doc                      C) .xls                      D) .word

4) HTML means

- A) Hyper text make up language  
B) Hyper text menu language  
C) Hyper text mail language  
D) Hyper text markup language

5) \_\_\_\_\_ is a interface between user and hardware.

- A) Operating system                      B) Internet  
C) Hardware                      D) All the above

P.T.O.





2. Solve **any five** of the following : 10
- 1) What is mean by GUI ?
  - 2) State the function of operating system.
  - 3) Write the syntax of table tag.
  - 4) State any two aggregate function used in EXCEL.
  - 5) Define networking.
  - 6) Define Multitasking.
  - 7) Write the syntax of for loop used in Javascript.

3. A) Solve **any two** of the following : 10
- 1) Differentiate between LAN and WAN.
  - 2) Explain data types used in Javascript.
  - 3) Write a mail merge process in MS word.

- B) Solve **any two** of the following : 10
- 1) Explain the structure of HTML.
  - 2) State the modules of windows and explain control panel in detail.
  - 3) Define Multiprogramming. Explain in detail.

SECTION – II  
(Programming Using C – II)

1. Choose **correct** alternative : 5
- 1) A self contained block of statement that perform specific task is called  
A) Array                      B) Function                      C) Pointer                      D) Structure
  - 2) The scope of variable used is anywhere in the program called as \_\_\_\_\_ variable.  
A) External                      B) Static                      C) Global                      D) Local



3) Pointer is nothing but variables used to hold memory address of another variable.

A) True

B) False

4) Access the element of structure in main program with the help of \_\_\_\_\_ operator.

A) +

B) .

C) \*

D) None of these

5) void is the data types

A) True

B) False

2. Solve **any five** of the following :

**10**

1) Write the general syntax of function definition.

2) Define recursion.

3) Write the syntax of pointer initialization.

4) Define Nested Structure.

5) State any two built in function used in C language.

6) Write the purpose of fclose() and fopen() function.

7) State return types used in C language.

3. A) Solve **any two** of the following :

**10**

1) Write a program in C to calculate the factorial of given number of using function with argument with no return value.

2) Explain pointer arithmetic with example.

3) Define File. Explain their modes.

B) Solve **any two** of the following :

**10**

1) Define structure. Explain arrays of structure with example.

2) Write the difference between actual parameter and formal parameter.

3) Write a program in C to copy one file into another.



SLR-SZ – 21

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**B.Sc. (ECS) – I (Semester – II) (Old) Examination, 2017  
(CGPA Pattern)  
Electronics (Paper – III)  
LINEAR AND DIGITAL ELECTRONICS – II**

Day and Date : Thursday, 16-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to right indicate full marks.*  
3) *Draw circuit diagram wherever necessary.*

SECTION – I  
(Linear Electronics)

1. Multiple Choice Questions :

5

- 1) FET is \_\_\_\_\_ device.  
a) bipolar                      b) unipolar                      c) non polar                      d) polar
- 2) IC 555 is \_\_\_\_\_ pin IC package.  
a) 14                              b) 16                              c) 8                              d) 20
- 3) Total phase shift of CE amplifier is \_\_\_\_\_ degree.  
a) 60                              b) 90                              c) 360                              d) 180
- 4) In inverting op-amp o/p is  
a) In phase                              b) Out of phase  
c) In same phase                              d) None of these
- 5) Ideal i/p impedance of op-amp is  
a) zero                              b) infinity  
c) 1k                              d) 100 k

P.T.O.



2. Answer **any five** of the following : **10**
- 1) Draw symbols of JFET.
  - 2) Define amplifier and classify based on coupling.
  - 3) Explain input bias current of op-amp.
  - 4) What is function of gate in FET ?
  - 5) Explain gain of CE amplifier.
  - 6) What is concept of offset balance ?
  - 7) Explain concept of phase shift oscillator.
3. A) Write short note on **any two** of the following : **10**
- 1) Explain depletion type MOSFET.
  - 2) Explain RC coupled amplifier.
  - 3) Explain Hartley oscillator.
- B) Answer **any one** of the following : **10**
- 1) Explain non-inverting op-amp and op-amp as adder and subtractor.
  - 2) Explain CE amplifier and its frequency response curve.

SECTION – II  
(Digital Electronics)

1. Multiple Choice Questions: **5**
- 1) SRAM uses \_\_\_\_\_ to store information.  
a) Resistor                      b) Flip-flop                      c) Magnet                      d) Capacitor
  - 2) Selected information is erased in  
a) ROM                      b) UVROM                      c) EEPROM                      d) PROM
  - 3) Race around condition occurs in \_\_\_\_\_ F/F.  
a) RS                      b) JK                      c) CLK RS                      d) D



4) IC \_\_\_\_\_ is used as counter.

- a) 7490                      b) 7493                      c) 7495                      d) 7474

5) \_\_\_\_\_ F/F is used in shift register.

- a) D F/F                      b) T F/F                      c) RS F/F                      d) None of these

2. Answer **any five** of the following : **10**

- 1) Draw circuit diagram of clocked RS F/F.
- 2) Explain concept of DAC and ADC.
- 3) Explain UVPRM.
- 4) What is function of F/F ?
- 5) What are the drawback of RS F/F ?
- 6) Explain concept of diode ROM.
- 7) What is mean by PROM ?

3. A) Write short note on **any two** of the following : **10**

- 1) Explain right shift register.
- 2) Explain DRAM memory cell.
- 3) Explain ring counter.

B) Answer **any one** of the following : **10**

- 1) Explain 3 bit synchronous up down counter with block diagram.
- 2) Explain digital to analog converter in detail.

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**B.Sc. (ECS) – I (Semester – II) (Old CGPS) Examination, 2017**  
**MATHEMATICS (Paper – IV)**  
**Algebra and Operational Research**

Day and Date : Friday, 17-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

- N.B. :** 1) **All questions are compulsory**  
2) **Use of scientific calculator is allowed.**  
3) **Figures to the right indicate full marks.**  
4) **To draw the graphs (If necessary) the graph paper will be provided on request.**

**SECTION – I**  
**(Algebra)**

1. Choose the **correct** alternative.

5

- 1) The inverse of  $p \rightarrow q$  is
  - a)  $\sim p \rightarrow \sim q$
  - b)  $q \rightarrow P$
  - c)  $\sim q \rightarrow \sim p$
  - d) None of these
- 2) If  $(a * b) * c = a * (b * c)$  for all  $a, b, c, \in A$  then  $*$  is said to be
  - a) Commutative
  - b) Non Commutative
  - c) Associative
  - d) Distributive
- 3) If every element of set A is related to unique element of set B, then such a relation is called as \_\_\_\_\_ from A to B.
  - a) Function
  - b) Void relation
  - c) Co-domain
  - d) Universal relation
- 4) The imaginary part of complex number  $11 - 6i$  is
  - a) 6
  - b)  $-6$
  - c)  $6i$
  - d)  $-6i$
- 5) If  $x R y$  and  $y R x$  then relation R is called as \_\_\_\_\_ relation.
  - a) Symmetric
  - b) Asymmetric
  - c) Antisymmetric
  - d) Equivalence

P.T.O.



2. Attempt **any five** of the following :

10

- 1) Compute modulus and argument of complex number  $z = 3 + 3i$ .
- 2) Write  $M(R)$  and draw the Diagram of relation  $R = \{ (x, y) (x, z) (z, w) (z, z) (z, y) (y, z), (y, y) (y, w) (w, x) (w, z) \}$  defined on set  $A = \{ x, y, z, w \}$
- 3) Define domain and co-domain of the function.
- 4) Prepare the truth table of  $\sim P \rightarrow (p \cap q)$ .
- 5) If  $f(x) = x^2 + 3x + 2$ , find
  - i)  $f(1)$     ii)  $f(2)$
- 6) If  $A = \{a, b, c\}$   $B = \{1, 2\}$  find  $A \times B$  and  $B \times A$ .
- 7) State the first principle of Mathematical Induction.

3. A) Attempt **any two** of the following :

10

1) If  $z_1 = 3 + 2i$  and  $z_2 = 4 + 5i$  find

i)  $\bar{z}_1$     2)  $\bar{z}_2$     3)  $z_1 + z_2$     4)  $z_1 - z_2$     5)  $z_1 \cdot z_2$

2) Prove by using mathematical induction,

$$1 + 2 + 3 + \dots + n = \frac{n(n+1)}{2} \text{ for all } n \geq 1$$

3) Show that function  $f(x) = \frac{3x-11}{2}$  for all  $x \in \mathbb{R}$  is one-one and on to. where  $f : \mathbb{R} \rightarrow \mathbb{R}$ .

B) Attempt **any one** of the following :

10

1) Define tautology and contradiction.

Prove the following using truth table

1)  $\sim(p \wedge q) \equiv \sim p \vee \sim q$

2)  $P \wedge (q \wedge r) \equiv (p \wedge q) \wedge r$

2) Let  $A = \{1, 2, 3, 4\}$ . Let  $R$  be the relation defined on set  $A$  given by,  $R = \{(1,1), (1, 2), (2, 3), (2, 1), (3, 2), (3, 4), (4,2)\}$  Find transitive closure ( $R^*$ ) of relation  $R$  by using Warshall's algorithm. Also draw diagram of  $R^*$ .

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SECTION – II  
(Operations Research)

1. Choose the **correct** alternative. 5

- 1) The coefficient of slack variable in the objective function of maximization type is  
a) + m                      b) – m                      c) Zero                      d) One
- 2) Graphical method of solving LPP can be used only when the number of decision variables are  
a) More than 2                      b) More than 3  
c) 2                      d) None of these
- 3) The objective of TP is to be \_\_\_\_\_ the total transportation cost.  
a) Maximize                      b) Minimize                      c) Zero                      d) None of these
- 4) \_\_\_\_\_ problem is special type of L.P.P.  
a) T.P.                      b) A.P.                      c) L.P.P.                      d) None of these
- 5) If number of Jobs is equal to number of facilities then the A.P. is said to be \_\_\_\_\_ assignment problem.  
a) Unbalanced                      b) Restricted                      c) Balanced                      d) None of these

2. Attempt **any five** of the following : 10

- 1) Define surplus variable.
- 2) Define unbalanced T.P.
- 3) Define slack variable.
- 4) Write the names of the methods to find I.B.F.S. of T.P.
- 5) Write dual of following L.P.P.  
Minimize,  $z = 4x + 5y$   
Subject to  $3x + 2y \geq 5, x + y \geq 4, x \geq 0, y \geq 0.$
- 6) Write the standard form of L.P.P.

$$\text{Max : } z = 5x_1 + 3x_2$$

$$\begin{aligned} \text{Subject to } & x_1 - 3x_2 \leq 2 \\ & -x_1 + x_2 \leq 1 \\ & x_1 \geq 0, x_2 \geq 0. \end{aligned}$$





7) Convert following A.P. of maximize type into minimize type.

$$\begin{matrix} & \text{I} & \text{II} & \text{III} \\ \text{P} & \begin{bmatrix} 50 & 43 & 53 \end{bmatrix} \\ \text{Q} & \begin{bmatrix} 47 & 12 & 28 \end{bmatrix} \\ \text{R} & \begin{bmatrix} 24 & 27 & 55 \end{bmatrix} \end{matrix}$$

3. A) Attempt **any two** :

10

- 1) Give the difference in A.P. and T.P.
- 2) Solve following L.P.P by Graphical method  
 Maximize :  $z = 2x + 4y$ ,  
 Subject to  $x + 2y \leq 5$ ,  $x + y \leq 4$   
 $x, y \geq 0$ .

3) Find IBFS of following by TP by VAM method

|       |    |    |    |    |       |
|-------|----|----|----|----|-------|
|       | P  | Q  | R  | S  | $a_i$ |
| A     | 1  | 2  | 1  | 4  | 30    |
| B     | 3  | 3  | 2  | 1  | 50    |
| C     | 4  | 2  | 5  | g  | 20    |
| $b_j$ | 20 | 40 | 30 | 10 |       |

3. B) Attempt **any one** of the following :

10

1) Solve the following A.P. to maximise the profit

$$\begin{matrix} & \text{A} & \text{B} & \text{C} & \text{D} & \text{E} \\ 1 & \begin{bmatrix} 62 & 78 & 50 & 101 & 82 \end{bmatrix} \\ 2 & \begin{bmatrix} 71 & 84 & 61 & 73 & 59 \end{bmatrix} \\ 3 & \begin{bmatrix} 87 & 92 & 111 & 71 & 81 \end{bmatrix} \\ 4 & \begin{bmatrix} 48 & 64 & 87 & 77 & 80 \end{bmatrix} \end{matrix}$$

2) Find optimum solution of following IBFS by MODI method.

|               | $D_1$ | $D_2$ | $D_3$ | $D_4$ | Supply |
|---------------|-------|-------|-------|-------|--------|
| $O_1$         | 5     | 2     | 4     | 3     | 22     |
| $O_2$         | 4     | 8     | 1     | 6     | 15     |
| $O_3$         | 4     | 6     | 7     | 5     | 18     |
| <b>Demand</b> | 7     | 12    | 17    | 19    | 55     |

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**B.Sc. (ECS) (Part – I) (Semester – II) (Old CGPA) Examination, 2017**  
**DESCRIPTIVE STATISTICS AND PROBABILITY THEORY – II**  
**(Paper – V)**

Day and Date : Saturday, 18-11-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

- Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**  
3) **Use of any type of calculator is allowed.**  
4) **Use one answer book for both Sections.**

**SECTION – I**  
**(Descriptive Statistics)**

1. Choose the **most correct** alternative : **5**
- 1) The regression coefficients  $b_{yx}$  and  $b_{xy}$  are 1.2 and 0.3 respectively, then the value of  $r_{xy}$  is \_\_\_\_\_  
a) 0.3                      b) 0.6                      c) 0.9                      d) 1
  - 2) A lock-out in a factory for two months is associated with \_\_\_\_\_ of a time series.  
a) Seasonal Variation                      b) Cyclical Variation  
c) Irregular Variation                      d) Regular Variation
  - 3) If  $\sum P_1 = 669$  ;  $\sum P_1q_0 = 582$  ; and  $\sum P_0 = 807$  . Then price index is  
a) 88.25                      b) 92.80                      c) 103.5                      d) None of these
  - 4) Expenditure on advertisement and sale of the product is related to \_\_\_\_\_ type of correlation.  
a) Positive                      b) Negative                      c) Zero                      d) All of these
  - 5) In a multi-variate study, the correlation between any two variable eliminating the effect of all other variables is called  
a) Simple correlation                      b) Partial correlation  
c) Multiple correlation                      d) All of these

**P.T.O.**



2. Attempt **any five** :

10

- 1) Define – correlation.
- 2) Define – index number.
- 3) State any two problems in construction of I. No.
- 4) Given :  $r_{12} = 0.6$ ,  $r_{13} = 0.5$  and  $r_{23} = 0.8$ , find  $r_{12.3}$ .
- 5) If  $X + 2Y = 20$  is the line of regression of Y on X, find regression coefficient Y on X.
- 6) Given :  $\sum P_0 = 112$ ,  $\sum P_1 q_0 = 115$  and  $\sum p_0 q_0 = 1050$ . Find appropriate price index number.
- 7) Given :  $\text{Cov}(X, Y) = 76$ , S.D. of X is 11.5 and S.D. of Y is 9.4. Find  $r_{xy}$ .

3. A) Attempt **any two** :

10

- 1) Write a note on cyclical variation.
- 2) For the following data find price index number for 2012 by
  - i) Simple aggregate method
  - ii) By simple average of relatives method.

| Commodity     | AB | CD | EF | GH |
|---------------|----|----|----|----|
| Price in 2012 | 30 | 64 | 20 | 13 |
| Price in 2011 | 25 | 50 | 25 | 10 |

- 3) From a bivariate distribution a sample of 40 observations gives the following results.

$$\sum X = 800, \sum Y = 400, \sum X^2 = 40400, \sum Y^2 = 30800 \text{ and}$$

$$\sum XY = 33000 \text{ obtain the equation of line of regression of Y on X.}$$



B) Attempt **any one** :

10

- 1) Given the following data, find the regression equation of  $X_1$  on  $X_2$  and  $X_3$ . Estimate  $X_1$  when  $X_2 = 40$  and  $X_3 = 30$ ,

|       |   |   |    |    |
|-------|---|---|----|----|
| $X_1$ | 2 | 4 | 5  | 8  |
| $X_2$ | 6 | 5 | 9  | 11 |
| $X_3$ | 4 | 6 | 10 | 8  |

- 2) Define-regression and derive equation of line of regression by least square method.

SECTION – II

(Probability Theory – II)

4. Choose the **most correct** alternative :

5

- 1) If a r.v.  $X$  has exponential distribution with mean 10, then variance of  $X$  is

a) 100                      b) 10                      c) 81                      d) None of these

- 2) The area of critical region depends on

a) Value of statistics                      b) Size of type-I error  
c) Number of observations                      d) Size of type-II error

- 3) If  $X \rightarrow U(5, 25)$ , then mean of r.v.  $X$  is

a) 5                      b) 25                      c) 15                      d) 20

- 4) If  $X \rightarrow N(\mu = 60, \sigma^2 = 25)$ , then value of mode r.v.  $X$  is

a) 60                      b) 25                      c) 85                      d) None of these

- 5) Random variables  $X$  and  $Y$  are said to be independent, if

a)  $E(X \cdot Y) = E(X) \cdot E(Y)$                       b)  $E(XY) = \text{any constant value}$   
c)  $E(X/Y) = E(X)/E(Y)$                       d) None of these

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5. Attempt **any five** : 10
- 1) Define null and alternative hypothesis.
  - 2) Define exponential distribution with parameter  $\theta$ .
  - 3) A continuous r.v.  $X$  has p.d.f.  $f(x) = k X^3$ , if  $-1 \leq X \leq 2$ . Find value of 'k'.
  - 4) Find  $p(X = 1/Y = 2)$ , if the joint p.m.f. of  $(X, Y)$  is  $P(x, y) = (2x + 3y)/71$ , if  $X = 0, 1, 2$  and  $Y = 1, 2, 3$ .
  - 5) Define probability density function (p.d.f.)
  - 6) Define variance of continuous r.v.  $X$ .
  - 7) Define type-I and type -II error.
6. A) Attempt **any two** : 10
- 1) The joint pmf of  $(X ; Y)$  is  
 $P(x, y) = K(5x + 3y)$ , if  $X = 1, 2, 3$  and  $Y = 0, 1, 2$ . Find value of  $K$  and hence obtain marginal p.m.f. of  $X$  and  $Y$ .
  - 2) Define cumulative distribution function (cdf) of a continuous r.v.  $X$ . State any three properties of it.
  - 3) A manufacturer of ball-bearings guarantees that 2% of items are defective. A sample of 1500 ball-bearings gave 50 defective. Can we say the product meets the guarantee ?
- B) Attempt **any one** : 10
- 1) Write the test procedure for testing equality of two population means.
  - 2) A continuous r.v.  $X$  has probability density function  
 $f(x) = 6x(1 - x)$ , if  $0 \leq X \leq 1$ .  
 $= 0$  otherwise.  
Calculate : i)  $E(X)$   
ii)  $E(X^2)$   
iii)  $P(X < 0.5)$   
iv)  $V(X)$   
v) c. d. f. of  $X$ .

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**B.Sc. (E.C.S.) (Part – II) (Semester – III) (New CBCS) Examination, 2017  
OBJECT ORIENTED PROGRAMMING USING C++ (Paper – I)**

Day and Date : Friday, 24-11-2017

Max. Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

**Instructions:** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the most correct alternatives :

14

1) Which of the following is not the type of constructor ?

- a) default constructor
- b) copy constructor
- c) parameterized constructor
- d) friend constructor

2) What is the result of the following statement ?

X = 10;

Y = ++X;

- a) X = 10, Y = 10
- b) X = 11, Y = 11
- c) X = 10, Y = 11
- d) X = 11, Y = 10

3) Friend function can access \_\_\_\_\_ data of class.

- a) Private
- b) Public
- c) Protected
- d) All of these

4) Which of the following operator cannot be overloaded ?

- a) :?
- b) <<
- c) >>
- d) +

5) Wrapping of data and functions into a single unit is called as

- a) Constructor
- b) Data encapsulation
- c) Polymorphism
- d) Inheritance

6) Which of the following function is used to check the current position of an input stream ?

- a) tellg()
- b) tellp()
- c) get()
- d) put()



- 7) In public derivation of class, private data of base class becomes \_\_\_\_\_ for derived class.  
a) Private            b) Public            c) Protected            d) Not inherited
- 8) Compile time polymorphism is achieved by  
a) Function overloading            b) Operator overloading  
c) Both a) and b)            d) Virtual function
- 9) Return type of destructor is  
a) void            b) int  
c) float            d) does not have any type
- 10) << is called  
a) Insertion operator            b) Extraction operator  
c) Object            d) External operator
- 11) While overloading unary operators using member function, it requires \_\_\_\_\_ argument(s).  
a) zero            b) one            c) two            d) three
- 12) \_\_\_\_\_ class cannot be instantiated.  
a) friend            b) abstract            c) inherited            d) b) and c)
- 13) Destructor is prefix with a \_\_\_\_\_ character.  
a) Semi colon            b) Colon  
c) Tidle            d) None of the above
- 14) When a virtual function is redefined by the derived class, it is called  
a) overloading    b) overriding    c) rewriting            d) none of the above

2. Answer **any seven** from the following :

**14**

- 1) List out the rules to set the identifiers.
- 2) List out the various file opening modes.
- 3) What is derived data type ?
- 4) What is the use of “this” pointer ?
- 5) What is pure virtual function ?
- 6) Write rules for declaring constructor.
- 7) Write syntax of class definition.
- 8) Explain memory management operators used in C++.
- 9) What is command line argument ?

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3. A) Answer **any two** from the following : **10**
- 1) What is inheritance ? Explain types of inheritance with suitable diagram.
  - 2) Explain static member function with suitable example.
  - 3) What is function ? Explain components of function.
- B) Write a program to show the use of constructors. **4**
4. Answer **any two** from the following : **14**
- 1) Explain copy constructor with suitable program.
  - 2) Explain object oriented programming principles.
  - 3) What are file pointers ? Explain get-pointers and put-pointers.
5. Answer **any two** from the following : **14**
- 1) Write a program in C++ to implement any one unary operator overloading with member function.
  - 2) Why we need virtual functions ? Explain it with suitable program.
  - 3) What is operator overloading ? State various rules to overload operators.
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**B.Sc. (E.C.S.) – II (Semester – III) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – II : Software Engineering (New CBCS)**

Day and Date : Saturday, 25-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) Figure to the **right** place indicate **full** marks.

1. A) Choose correct alternatives.

10

- 1) In an ER-Diagram to represent an attribute we use \_\_\_\_\_
  - a) Rectangle
  - b) Ellipse
  - c) Diamond
  - d) Line
- 2) White box testing is also called \_\_\_\_\_
  - a) Glass box testing
  - b) Green box testing
  - c) Functional testing
  - d) None of these
- 3) Weather forecasting is an example of \_\_\_\_\_ system.
  - a) Deterministic
  - b) Probabilistic
  - c) Open
  - d) Closed
- 4) Design phase will usually be \_\_\_\_\_
  - a) top-down
  - b) bottom-up
  - c) random
  - d) center fingering
- 5) Which of the following is not related with system analyst ?
  - a) Collection of requirement
  - b) User training
  - c) Creating model
  - d) Programming
- 6) The data flow diagram is the basic component of \_\_\_\_\_ system.
  - a) Conceptual
  - b) Logical
  - c) Physical
  - d) None of these
- 7) Which model is also known as verification and validation model ?
  - a) Waterfall model
  - b) Big Bang model
  - c) V-model
  - d) Spiral model

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- 8) What are the qualities of a good s/w ?
- a) Reusability
  - b) Portability
  - c) Inter operability
  - d) All of the above
- 9) Prototype is a
- a) Working model of existing system
  - b) Mini model of existing system
  - c) Mini model of processed system
  - d) None of the above
- 10) Which type of DFD shows how the data flow is actually implemented in the system and it is also more specific and close to the implementation ?
- a) Logical DFD
  - b) Physical DFD
  - c) Both a) and b)
  - d) None of the above

B) State the following statements **true/false**.

4

- 1) A good structured design has low cohesion and high coupling arrangements.
- 2) CASE tools are used by software project managers, analysts and engineers to develop software system.
- 3) First level DFD contains single process.
- 4) System survey is the first step of SDLC.

2. Answer **any seven** of the following :

14

- 1) What is feasibility study ?
- 2) What is data dictionary ?
- 3) Draw any 4 symbols of flowchart.
- 4) What is system specification ?
- 5) What is decision table ?
- 6) What is system ?
- 7) Write the different phases of SDLC.
- 8) What is purpose of DFD ?
- 9) HIPO and RAD stands for



3. A) Answer **any two** of the following. **10**
- 1) Design input system for library system.
  - 2) Explain different roles played by system analyst.
  - 3) Explain white box testing in detail.
- B) Explain the different elements of the system. **4**
4. Answer **any two** of the following. **14**
- 1) Explain different fact finding technique.
  - 2) Draw a CLD and first level DFD for Bank Fixed Deposit system.
  - 3) Draw a decision tree and limited entry table for following case study :  
Material is issued to the department by considering whether the Material Requisition Note (MRN) is signed or not, it contains valid items or not and it is given within 8 hours or not.
5. Answer **any two** of the following. **14**
- 1) Explain spiral model in detail.
  - 2) What is normalization ? Explain up to 3NF.
  - 3) Define the term entity, attribute and relationship with example.
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**B.Sc. (ECS) – II (Semester – III) (New CBCS Pattern) Examination, 2017  
OPERATING SYSTEMS (Paper – III)**

Day and Date : Monday, 27-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose **correct** alternative. **14**

- 1) An Edge ( $R_i \rightarrow P_j$ ) in a resource allocation graph indicates that
  - a) Resource  $R_i$  is hold by Process  $P_j$
  - b) Process  $P_j$  is waiting for Resource  $R_i$
  - c) Process  $P_j$  does not need Resource  $R_i$
  - d) None
  
- 2) \_\_\_\_\_ O.S is largely used in Defense applications.
  - a) Multi-Programming
  - b) Real Time
  - c) Time Sharing
  - d) Parallel
  
- 3) Spinlock is a type of
  - a) Semaphore
  - b) Critical Region
  - c) Monitor
  - d) None
  
- 4) The Context Switch Time is \_\_\_\_\_ for Multiprogramming/  
multitasking.
  - a) Useful
  - b) Turnaround time
  - c) Pure overhead
  - d) None
  
- 5) Bankers Algorithm is used to \_\_\_\_\_ Deadlock in OS.
  - a) Prevent
  - b) detect
  - c) avoid
  - d) Recover



- 6) If time slice is too short in RR scheduling then it suffers from
- a) High waiting time
  - b) High turnaround time
  - c) High Context Switch time
  - d) High Turned wait time
- 7) CPU can only execute Programs which are stored in
- a) Hard disk
  - b) Floppy drive
  - c) Job queue
  - d) Main memory
- 8) The total time spent by process in the ready queue is called as
- a) Turnaround time
  - b) Response time
  - c) Waiting time
  - d) None
- 9) \_\_\_\_\_ is the time taken by the disk head to move from one cylinder to another one.
- a) Transfer time
  - b) Rotational time
  - c) Seek time
  - d) Move time
- 10) Segmentation suffers from
- a) External fragmentation
  - b) Internal fragmentation
  - c) Compaction
  - d) Both
- 11) We cannot have more than one instance of the same resource.
- a) True
  - b) False
- 12) More than one process can share same PCB.
- a) True
  - b) False
- 13) For ensuring deadlock prevention we must ensure that all four necessary conditions are not hold.
- a) True
  - b) False
- 14) Using Overlays we can execute a big program into smaller memory.
- a) True
  - b) False



2. Attempt **any seven** of the following : 14
- 1) What is use of wait-for graph ?
  - 2) Define system call.
  - 3) Define Compaction.
  - 4) What is thrashing ?
  - 5) What is function of Long term scheduler ?
  - 6) Define Virtual Memory.
  - 7) Write difference between program and process.
  - 8) What is meant by Dynamic Loading ?
  - 9) Write Belady's Anomaly situation.

3. A) Attempt **any two** of the following : 10
- 1) Explain Critical Section Problem.
  - 2) Define Deadlock and explain necessary conditions to occur deadlock.
  - 3) List out file attributes with description.

- B) Consider the given scenario of processes with time slice = 2; 4

| Process | Arrival Time | Execution Time |
|---------|--------------|----------------|
| P1      | 0            | 9              |
| P2      | 1            | 5              |
| P3      | 2            | 3              |
| P4      | 3            | 4              |

Calculate average turnaround time and average waiting time using RR scheduling algorithm.

4. Attempt **any two** of the following : 14
- 1) Explain all File Allocation Methods.
  - 2) Define O.S and explain services provided by O.S.



3) Calculate number of page fault for given reference string by using following Page Replacement algorithms with frame size as 3.

- a) FIFO                      b) Optimal              c) LRU  
 5, 0, 2, 1, 0, 3, 0, 2, 4, 3, 0, 3, 2, 1, 3, 0, 1, 5

5. Attempt **any two** of the following :

14

- 1) Explain Paging in detail.
- 2) Define Seek time, Calculate and show with diagram the total disk head movement time using.
  - a) FCFS Disk Scheduling Algorithm.
  - b) SSTF Disk Scheduling Algorithm  
 For following Disk Queue  
 54, 97, 73, 128, 15, 44, 110, 34, 45 Disk Head Start = 23
- 3) Consider following snapshot of system.

| Allocation | MAX |   |   |   |    | Available |   |   |   |   |   |   |   |
|------------|-----|---|---|---|----|-----------|---|---|---|---|---|---|---|
|            | A   | B | C | D |    | A         | B | C | D |   |   |   |   |
| P0         | 0   | 0 | 1 | 2 | P0 | 0         | 0 | 1 | 2 | 1 | 5 | 2 | 0 |
| P1         | 1   | 0 | 0 | 0 | P1 | 1         | 7 | 5 | 0 |   |   |   |   |
| P2         | 1   | 3 | 5 | 4 | P2 | 2         | 3 | 5 | 6 |   |   |   |   |
| P3         | 0   | 6 | 3 | 2 | P3 | 0         | 6 | 5 | 2 |   |   |   |   |
| P4         | 0   | 0 | 1 | 4 | P4 | 0         | 6 | 5 | 6 |   |   |   |   |

Answer the following questions by using Bankers Algorithm,

- a) What are the contents of Need Matrix ?
- b) Is system in a safe state ?
- c) If request from P1 arise for (0 4 2 0) will be granted immediately ?

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SLR-SZ – 27

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**B.Sc. (ECS) – II (Semester – III) (New CBCS) Examination, 2017**  
**Paper – IV : DATA STRUCTURES**

Day and Date : Tuesday, 28-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. Choose **correct** alternatives. **14**
- 1) In \_\_\_\_\_ deque, element is inserted from both ends and removed from one end.  
a) IRD                      b) ORD                      c) Circular                      d) Linear
  - 2) The node of doubly list contains \_\_\_\_\_ parts.  
a) One                      b) Two                      c) Three                      d) Zero
  - 3) Stack overflow condition occurs while performing \_\_\_\_\_ operation.  
a) create()                      b) push()                      c) pop()                      d) isfull()
  - 4) Which of the following search method uses an auxiliary storage for searching ?  
a) Linear                      b) Binary  
c) Indexed sequential                      d) None of these
  - 5) Which of the following is an application of stack data structure ?  
a) Reversal of string  
b) Evaluation of Postfix expression  
c) Matching parenthesis in an expression  
d) All of these

P.T.O.





- 6) In case of binary expression tree, parent node always represents
- a) Operand
  - b) Operator
  - c) Opening parenthesis
  - d) Closing parenthesis
- 7) How many possible binary trees can be constructed using 7 nodes ?
- a) 429
  - b) 249
  - c) 559
  - d) 659
- 8) \_\_\_\_\_ sort method uses divide and conquer strategy.
- a) Bubble
  - b) Selection
  - c) Insertion
  - d) Quick
- 9) If one hash function generates same address for different keys then is called
- a) Collision
  - b) Randomization
  - c) Serialization
  - d) Both a and b
- 10) To sort 'n' elements in ascending order, bubble sort requires \_\_\_\_\_ maximum passes.
- a)  $n + 1$
  - b)  $n - 1$
  - c)  $n$
  - d)  $n^2$
- 11) \_\_\_\_\_ type of queue is used in time sharing operating system.
- a) Linear
  - b) Circular
  - c) Priority
  - d) Deque
- 12) \_\_\_\_\_ data structure is useful for polynomial manipulations.
- a) Stack
  - b) Queue
  - c) Linked List
  - d) Both a and b
- 13) \_\_\_\_\_ search method is applicable sorted as well as unsorted data.
- a) Linear
  - b) Binary
  - c) Both a and b
  - d) None of these
- 14) Header node always stores address of \_\_\_\_\_ node.
- a) First
  - b) Middle
  - c) Second last
  - d) Last



2. Answer **any seven** of the following : **14**
- 1) Why linked list is flexible than stack and queue ?
  - 2) What is precondition for PUSH operation ?
  - 3) Write any two real life examples of queue.
  - 4) List out applications of tree data structure.
  - 5) What is linear and non-linear Data structure ?
  - 6) Differentiate between linked list and array.
  - 7) What is strictly binary tree ?
  - 8) What is dynamic memory allocation.
  - 9) What is drawback of sequential access ?
3. A) Attempt **any two** of the following : **10**
- 1) Implement function that returns topmost element from stack.
  - 2) Write an algorithm that converts an infix expression to postfix expression.
  - 3) Explain 'Selection Sort' method with example.
- B) Write a program that finds addition of two matrices. **4**
4. Answer **any two** of the following : **14**
- 1) Write a program to implement stack using linked list.
  - 2) What is traversal ? Explain all tree traversal methods with example.
  - 3) What is Circular Queue ? Explain following operations of circular queue-  
a) insert()                      b) remove()                      c) display()
5. Answer **any two** of the following : **14**
- 1) Write a program that finds binary equivalent number of decimal number using stack.
  - 2) Write an algorithm and implement function that inserts new node into binary search tree.
  - 3) What is B-tree ? Write its characteristics and Construct B-tree of order five for following data.

|    |    |    |    |    |    |    |    |   |    |    |    |    |    |   |    |    |    |    |    |
|----|----|----|----|----|----|----|----|---|----|----|----|----|----|---|----|----|----|----|----|
| 10 | 57 | 86 | 93 | 54 | 25 | 20 | 14 | 4 | 63 | 77 | 92 | 32 | 48 | 7 | 66 | 41 | 55 | 30 | 88 |
|----|----|----|----|----|----|----|----|---|----|----|----|----|----|---|----|----|----|----|----|



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**B.Sc. (E.C.S.) – II (Semester – III) (New CBCS – Pattern)  
Examination, 2017  
EMBEDDED SYSTEM – I (Paper – V)**

Day and Date : Wednesday, 29-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. Multiple Choice Questions.

14

- 1) ARM is \_\_\_\_\_ bit processor.  
a) 8                      b) 16                      c) 32                      d) 64
- 2) \_\_\_\_\_ processor used for fast signal processing.  
a) 8086                      b) 8051                      c) ARM                      d) DSP
- 3) \_\_\_\_\_ is kernel object that is used for both resource synchronization and task synchronization.  
a) Pipes                      b) Semaphore                      c) Threads                      d) Signals
- 4) \_\_\_\_\_ protocol comes under IEEE 802.11 family of standards.  
a) USB                      b) CAN                      c) Bluetooth                      d) PCI
- 5) In real time operating system each task \_\_\_\_\_ time period.  
a) Large                      b) Specific                      c) Variable                      d) Small
- 6) ARM processor has \_\_\_\_\_ operating modes.  
a) 3                      b) 5                      c) 7                      d) 9
- 7) The embedded software is also called  
a) Firmware                      b) SOC                      c) task                      d) Software
- 8) Microwave oven comes under \_\_\_\_\_ category of embedded system.  
a) Stand-alone                      b) Real-time  
c) Networked                      d) Mobile

P.T.O.



- 9) The Von Neumann architecture has \_\_\_\_\_ memory chip to stores both instructions and data.
- a) One                      b) Two                      c) Three                      d) Four
- 10) CISC type processor has \_\_\_\_\_ instruction set.
- a) Reduced                      b) Large                      c) Small                      d) Limited
- 11) SPI is \_\_\_\_\_ communication protocol.
- a) Synchronous                      b) Asynchronous  
c) Parallel                      d) Linear
- 12) The 8086 processor \_\_\_\_\_ bit address lines.
- a) 8                      b) 16                      c) 20                      d) 24
- 13) The 8085 processor has \_\_\_\_\_ memory addressing capacity.
- a) 32 KB                      b) 64 KB                      c) 1 MB                      d) 16 KB
- 14) \_\_\_\_\_ is interface between user and computer.
- a) Application program                      b) Hardware  
c) Operating System                      d) Mouse

2. Answer **any seven** of the following :

**14**

- 1) Write applications of Embedded System.
- 2) What is optimizing design metrics ?
- 3) Write features of 8086.
- 4) What is watchdog timer ?
- 5) What is semaphores in RTOS ?
- 6) Write at least 4 core extensions of ARM family.
- 7) Write names of memory devices used in embedded system.
- 8) What is deadlock in RTOS ?
- 9) What is embedded system ?

**Set P**



3. A) Answer **any two** of the following : **10**
- 1) Explain difference between CISC and RISC.
  - 2) Explain Direct Memory Access (DMA) with diagram.
  - 3) Explain Design challenges in Embedded system.
- B) Write features of 8051. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain SPI, CAN, 12C, ISA, PCI, USB and Bluetooth communication protocol in brief.
  - 2) Explain ARM core data flow model.
  - 3) Explain scheduling policies in RTOS.
5. Attempt **any two** of the following : **14**
- 1) Explain all types of memory (e.g. RAM, ROM) devices used in embedded system.
  - 2) Explain at least seven instructions from data processing instruction group of ARM processor.
  - 3) What is need of interfacing ? How to interface any input or output device ?
-



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**B.Sc. (ECS) – II (Semester – III) Examination, 2017**  
**(New CBCS Pattern)**  
**ADVANCED MICROPROCESSOR (Paper – VI)**

Day and Date : Thursday, 30-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** i) **All questions are compulsory and carry equal marks.**  
ii) **Draw neat diagrams wherever necessary.**

1. Multiple choice questions.

14

- 1) Content addressable memory is \_\_\_\_\_ memory.  
a) Program      b) Associative      c) Direct      d) Primary
- 2) \_\_\_\_\_ stores address of next instruction.  
a) PC      b) SP      c) AX      d) ACC
- 3) MVI A, [B] is \_\_\_\_\_ addressing mode.  
a) implied      b) based      c) index      d) immediate
- 4) SP is used to points \_\_\_\_\_ in stack.  
a) byte      b) BOS      c) TOS      d) location
- 5) \_\_\_\_\_ perform logical operations.  
a) user      b) input      c) PCU      d) ALU
- 6) Data stored on magnetic tape in \_\_\_\_\_ track.  
a) longitudinal      b) semicircular  
c) spiral      d) circular
- 7) The IC \_\_\_\_\_ is input output processor.  
a) 8085      b) 8086      c) 8089      d) 8087

P.T.O.



- 8) To access 128 byte memory \_\_\_\_\_ no of address lines required.  
a) 8                      b) 7                      c) 16                      d) 20
- 9) The control unit uses \_\_\_\_\_ to give current condition of processor.  
a) PSW                      b) ACC                      c) DMA                      d) IAC
- 10) Flip flop are used to store information in  
a) DRAM                      b) SRAM                      c) EEPROM                      d) PROM
- 11) In memory mapped I/O control signals used are  
a) same                      b) common  
c) separate                      d) none of these
- 12) Data stored on CDROM on \_\_\_\_\_ track.  
a) longitudinal                      b) semicircular  
c) pits and land                      d) spiral
- 13) MOV A, 80H is \_\_\_\_\_ address instruction.  
a) two                      b) three                      c) one                      d) zero
- 14) \_\_\_\_\_ is used as direct memory access.  
a) 8237                      b) 8259                      c) 8253                      d) 8255

2. Answer **any seven** of the following :

**14**

- 1) What is mean by interface ?
- 2) Explain instruction format.
- 3) Explain concept of associative memory.
- 4) Explain characteristics of memory.
- 5) What is concept of delay element method in hardwired control ?
- 6) Explain two address instruction.
- 7) Explain program control instruction.
- 8) Explain data transfer instruction.
- 9) What is mean by daisy chaining ?

**Set P**



3. A) Answer **any two** of the following : **10**
- 1) Explain addressing modes of CPU.
  - 2) Explain memory hierarchy.
  - 3) Explain sequence counter method in hardwired control.
- B) Explain direct memory access. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain bit slice processor.
  - 2) Explain cache and virtual memory.
  - 3) Explain input output processor.
5. Attempt **any two** of the following : **14**
- 1) Explain register and stack organization.
  - 2) Explain main memory design and memory management concept.
  - 3) Explain asynchronous data transfer and serial communication.
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**B.Sc. (ECS) – II (Semester – III) (CGPA) Examination, 2017**  
**Paper – I : OPERATING SYSTEM**  
**(Old CGPA)**

Day and Date : Friday, 24-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose **correct** alternatives.

**14**

- 1) The critical section problem is a problem faced by
  - a) Co-operating Process
  - b) Operating Process
  - c) User Process
  - d) None of these
- 2) The SJF is a special case of
  - a) FCFS
  - b) Preemptive algorithm
  - c) Non-preemptive algorithm
  - d) Priority algorithm
- 3) System Programs are
  - a) O.S. Monitor code
  - b) Program Provides by O.S. to solve command problems
  - c) User Written programs
  - d) None of these
- 4) \_\_\_\_\_ is an example of distributed system.
  - a) Client User System
  - b) Clustered System
  - c) MultiProcessor System
  - d) All of these
- 5) The command Interpreter act as an Interface between
  - a) The User and CPU
  - b) CPU and Secondary Storage
  - c) The CPU and I/O Device
  - d) Between two different Process

P.T.O.



- 6) Long term scheduling execute more frequently than short term scheduler.
  - a) True
  - b) False
- 7) A Process execution begins and ends with
  - a) I/O burst
  - b) CPU burst
  - c) Both a and b
  - d) None of these
- 8) A semaphore cannot be used for solving the problem of critical section.
  - a) True
  - b) False
- 9) In Real-Time System \_\_\_\_\_ is important.
  - a) Completing Processing on time
  - b) Showing good User Interface
  - c) Optimum utilization of I/O Device
  - d) None of these
- 10) A Program stored on the disk, can also be called as process.
  - a) True
  - b) False
- 11) The ready queue is queue of
  - a) Processes ready to execute
  - b) Processes waiting for I/O
  - c) Processes near completion
  - d) Completed Process
- 12) The first O.S. developed was in the form of
  - a) Batch System
  - b) Simple Monitor
  - c) Multiprogramming O.S.
  - d) Time sharing O.S.
- 13) Which one of the following is a synchronization tool ?
  - a) Thread
  - b) Pipe
  - c) Semaphore
  - d) Socket
- 14) A system has 3 processes sharing 4 resources. If each process needs a Maximum of 2 units then, deadlock :
  - a) can never occur
  - b) may occur
  - c) has to occur
  - d) None of these

2. Solve **any seven** of the following :

14

- 1) What is Multiprogramming ?
- 2) What is Process ?
- 3) What is thread ?
- 4) Define O.S.



- 5) What is throughput ?
- 6) What is a critical region ?
- 7) What is process synchronization ?
- 8) What is Scheduling ?
- 9) What is File ?

3. A) Solve **any two** of the following : **10**

- 1) Explain distributed System in detail.
- 2) Define System call. Explain types of call.
- 3) Explain multilevel queue scheduling.

B) Explain Monolithic System. **4**

4. Solve **any two** of the following : **14**

- 1) Explain System Components in detail.
- 2) Write dining Philosophers problem.
- 3) Explain Process Control block.

5. Solve **any two** of the following : **14**

- 1) Explain System generalization and Virtual Machine.
- 2) To solve following algorithm with FCFS.

| Process | Burst Time |
|---------|------------|
| P1      | 24         |
| P2      | 3          |
| P3      | 3          |

- a) To draw Gantt Chart.
  - b) To Calculate turnaround Time.
  - c) To calculate waiting time and average waiting time.
- 3) Explain Process State in detail.
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**B.Sc. (E.C.S.) – II (Semester – III) (Old CGPA) Examination, 2017**  
**COMPUTER SCIENCE**  
**Object Oriented Programming Using C++ – I (Paper – II)**

Day and Date : Saturday, 25-11-2017  
Time : 2.30 p.m.to 5.00 p.m.

Total Marks : 70

***N.B. :*** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose **correct** alternatives. **14**
- 1) \_\_\_\_\_ are the basic runtime entities in an object oriented system.  
a) Class                  b) Object                  c) Both a and b                  d) None of these
  - 2) \_\_\_\_\_ plays an important role in allowing objects having different structure to share same external interface.  
a) Class                                  b) Object  
c) Data Abstraction                          d) Polymorphism
  - 3) The operator \_\_\_\_\_ is known as get from operator.  
a) <<                  b) >>                  c) ::                  d) None of these
  - 4) The variables declared within the body of the block are called \_\_\_\_\_ variables.  
a) Public                  b) Static                  c) Extern                  d) Local
  - 5) Constructors cannot be \_\_\_\_\_  
a) Public                  b) Static                  c) Virtual                  d) Both b and c
  - 6) No argument and return type permitted with \_\_\_\_\_  
a) Constructor                          b) Friend function  
c) Destructor                          d) None of these
  - 7) The act of communicating with an object to get something done is  
a) Message passing                          b) Polymorphism  
c) Inheritance                          d) All

**P.T.O.**



- 8) We cannot overload \_\_\_\_\_ operator.  
a) ::                      b) >>                      c) <<                      d) +
- 9) \_\_\_\_\_ function can only be called by another function that is a member of its class.  
a) Static member                      b) Public member  
c) Private member                      d) None of these
- 10) Classes that are defined and used inside a \_\_\_\_\_ are called \_\_\_\_\_ classes.  
a) Class, function                      b) Function, class  
c) Public, function                      d) None of these
- 11) We may create and use constant objects using \_\_\_\_\_ keyword before object declaration.  
a) Friend                      b) Const  
c) Public                      d) Private
- 12) The overloaded operator must have at least one operand that is of user defined type  
a) True                      b) False
- 13) We can refer to the addresses of constructor  
a) True                      b) False
- 14) By default data members and member functions of class are \_\_\_\_\_  
a) Static                      b) Public                      c) Private                      d) Friend

2. Answer the following (**any 7**) :

14

- 1) State benefits of oop's.
- 2) Explain dynamic initialization of variables.
- 3) State rules for overloading operators.
- 4) Explain type conversion.
- 5) Inline function.
- 6) Default arguments.
- 7) State applications of OOP.
- 8) Scope resolution operator.



3. A) Answer the following (**any 2**) : **10**
- 1) Explain basic concept of oops.
  - 2) What is call by value ? Write a program to swap two numbers using call by reference.
  - 3) Explain Nesting of member function with example.
- B) Write difference between Procedure Oriented Programming and Object Oriented Programming. **4**
4. Answer the following (**any 2**) : **14**
- 1) What is constructor ? Explain different types of constructor and state rules of constructor.
  - 2) What is friend function ? Write a program to implement friend function as a bridge between classes.
  - 3) Explain Static data member and Static member function with proper example.
5. Answer the following (**any 2**) : **14**
- 1) What are manipulators ? Write a program to implement manipulators.
  - 2) Write a program to overload Binary operator using friend function.
  - 3) What is array ? Explain array of objects with example.
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**B.Sc. (E.C.S.) – II (Semester – III) (Old CGPA) Examination, 2017**  
**Paper – III : DATA STRUCTURE AND ALGORITHMS**

Day and Date : Monday, 27-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose the **correct** alternatives. **14**
- 1) Which of following data structure is used to store data non-linear manner ?  
a) Stack                      b) Queue                      c) Linked list                      d) None of these
  - 2) Two main measures for the efficiency of an algorithm are  
a) Processor and memory                      b) Complexity and capacity  
c) Time and space                      d) Data and space
  - 3) What is the postfix form of given expression  $(A+B*C) - D$  are  
a)  $ABC+*D-$                       b)  $ABC*+D-$   
c)  $ABCD-*+$                       d)  $ABCD+* -$
  - 4) The simulation is an application of Queue.  
a) True                      b) False
  - 5) You can implement Stack using Array or Linked list.  
a) True                      b) False
  - 6) When we implement stack using linked list we perform operations on List \_\_\_\_\_ and \_\_\_\_\_  
a) Insert First, Delete First                      b) Insert Last, Delete Last  
c) Both a and b                      d) None of these



- 7) Evaluate the given postfix expression  $8\ 4\ 2\ \wedge\ +$ .
- a) 144                      b) 24                      c) 262144                      d) None of these
- 8) The lower bound of array is
- a) 0                      b)  $n - 1$                       c) 1                      d) None of these
- 9) In queue insert and delete element at end is called \_\_\_\_\_ respectively.
- a) Top                      b) Front and rear  
c) Rear and front                      d) None of these
- 10) The singly linked list contains \_\_\_\_\_ fields.
- a) One                      b) Two                      c) Three                      d) None of these
- 11) \_\_\_\_\_ is the circular.
- a) Queue                      b) Linked list  
c) Both a and b                      d) None of these
- 12) Which of the following is the drawback of an Array ?
- a) Fixed size                      b) To store data in limit  
c) Delete first element                      d) All of these
- 13) Batch programming is the application of queue.
- a) True                      b) False
- 14) In Doubly Linked list last node contains NULL.
- a) True                      b) False

2. Answer the following (**Any seven**) :

14

- 1) Define Big O Notation.
- 2) What is Time Complexity ?
- 3) Define Algorithm.
- 4) What is Greedy Algorithm ?
- 5) Define dequeue.
- 6) List out various real life examples of Queue.

Set P





- 7) Give the advantage of singly circular list.
  - 8) Define recursion.
  - 9) What is array of structure ?
  - 3. A) Answer the following (**any two**). **10**
    - 1) What is priority queue ? Explain different types of priority queue.
    - 2) What is complexity ? Explain how to analyze the complexity.
    - 3) What is ADT ? Explain linked list as ADT.
  - B) Convert the given infix expression into postfix expression by using stack. **4**  
 $(A * D - C \wedge D) + (E \wedge F * G)$
  - 4. Answer the following (**any two**). **14**
    - 1) Write a program to implement stack statically.
    - 2) Describe in detail circular queue.
    - 3) Write a program to implement Linked list with following operations.
      - a) Insert first
      - b) Delete first
      - c) Display list
  - 5. Answer the following (**any two**). **14**
    - 1) What is data structure ? Explain different types of data structure.
    - 2) What is queue ? Explain different operations performed on queue.
    - 3) Write a program to find sum of digit using recursion.
-



SLR-SZ – 33

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**B.Sc. (ECS) – II (Semester – III) (Old CGPA) Examination, 2017**  
**Paper – IV : SOFTWARE ENGINEERING – I**

Day and Date : Tuesday, 28-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right place indicate full marks.**

1. A) Choose **correct** alternatives. **10**

- 1) \_\_\_\_\_ is a tabular method for describing the logic of the decision to be taken.
  - a) Decision table
  - b) Decision tree
  - c) Decision data
  - d) Decision method
- 2) Design phase will usually be
  - a) Top-down
  - b) Bottom-up
  - c) Random
  - d) None of these
- 3) Cost-benefit analysis is performed during \_\_\_\_\_ phase.
  - a) Analysis
  - b) Design
  - c) Feasibility study
  - d) Implementation
- 4) Which of the following is not related with system analyst ?
  - a) Collection of requirement
  - b) User training
  - c) Creating models
  - d) Programming
- 5) History files, transaction reports are updated by
  - a) TPS
  - b) MIS
  - c) DSS
  - d) EIS

P.T.O.



- 6) If software can run in different environments then it is
- a) Reliable
  - b) User-friendly
  - c) Portable
  - d) Visible
- 7) Salary of the programmer is in \_\_\_\_\_ feasibility.
- a) Technical
  - b) Economical
  - c) Operational
  - d) None of these
- 8) \_\_\_\_\_ is an agreement between system developer and the end user.
- a) Requirement specification
  - b) Requirement Investigation
  - c) Both a and b
  - d) None of these
- 9) Detailed study of existing system is referred to as
- a) System planning
  - b) Design DFD
  - c) Feasibility study
  - d) System analysis
- 10) The interconnection and interaction between subsystems is called as
- a) Interface
  - b) Entity
  - c) Data path
  - d) Both b and c

B) State whether **true** or **false** :

4

- 1) Spiral model is useful to guide risk in the project.
- 2) System analyst should create models/prototypes of the system.
- 3) Record review is performed only in the beginning of study of the system.
- 4) Open system does not interact with an environment.

2. Answer **any seven** of the following :

14

- 1) Define 'System' and list out its characteristics.
- 2) Who is 'System Analyst' ?
- 3) Write seven stages of system development life cycle.



- 4) What is meant by 'Requirement Anticipation' ?
  - 5) What is 'Feedback' ?
  - 6) What is 'Decision Tree' ?
  - 7) What is deterministic and probabilistic system ?
  - 8) Define 'Software Engineering'.
  - 9) List of any 4 qualities of good software.
3. A) Attempt **any two** of the following : **10**
- 1) Draw the system flow chart for 'College Admission System'.
  - 2) Explain different elements of system with diagram.
  - 3) Explain 'Feasibility Study' with its types.
- B) Differentiate between System Analysis and System Design. **4**
4. Answer **any two** of the following : **14**
- 1) Explain 'Spiral Model' of SDLC.
  - 2) What is Decision table ? Explain its types with example.
  - 3) Explain different fact finding techniques.
5. Answer **any two** of the following : **14**
- 1) Draw the HIPO chart for payroll system.
  - 2) Explain different roles played by the system analyst.
  - 3) Explain different types of system.
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**B.Sc. (ECS) – II (Semester – III) Examination, 2017  
(Old CGPA Pattern)  
ORGANIZATION OF PC (Paper – V)**

Day and Date : Wednesday, 29-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** i) **All** questions are **compulsory** and carry **equal** marks.  
ii) Draw **neat** diagrams **wherever** necessary.

1. Fill in the blanks with **correct** alternatives and rewrite : **14**

- 1) \_\_\_\_\_ is a impact printer.  
a) Dot matrix      b) Inkjet      c) Laser      d) Thermal
- 2) Adder is used in  
a) UC      b) MMU      c) ALU      d) BIU
- 3) In \_\_\_\_\_ mode data transfer CPU is free for another work.  
a) Programmed      b) DMA  
c) Interrupt      d) None of these
- 4) Accumulator stores \_\_\_\_\_ result.  
a) Previous      b) Current      c) Next      d) Starting
- 5) RDRAM is developed by  
a) Toshiba      b) Samsung  
c) Toshiba and Samsung      d) Ramtron
- 6) In second generation of computer \_\_\_\_\_ is used.  
a) Transistor      b) Vacuum tube  
c) LSI IC      d) VLSI IC

P.T.O.



- 7) In OG motherboard \_\_\_\_\_ IC is used as PPI.  
a) 8253                      b) 8255                      c) 8257                      d) 8279
- 8) Data path error is \_\_\_\_\_ type interrupt.  
a) Hardware                                      b) SMI  
c) I/O                                              d) Data transfer
- 9) CD-ROM uses \_\_\_\_\_ beam for writing data.  
a) Electromechanical                                      b) Laser  
c) LED                                              d) Electrical
- 10) For OG machine real memory is up to  
a) 16 MB                                              b) 16 GB  
c) 16 KB                                              d) 64 MB
- 11) Daisy wheel is \_\_\_\_\_ type printer.  
a) Character                                              b) Line  
c) Page                                              d) Band
- 12) \_\_\_\_\_ motor is used to move read write head.  
a) DC                                              b) AC  
c) Spindle                                              d) Stepper
- 13) The physical memory of 80286 is  
a) 64 MB                      b) 16 MB                      c) 16 GB                      d) 16 KB
- 14) For NG system \_\_\_\_\_ interrupts are used.  
a) 16                      b) 8                      c) 4                      d) 20

2. Answer **any seven** of the following :

**14**

- 1) Explain multiprocessing operating system.
- 2) Explain hand held scanner.
- 3) Explain function of CRT.
- 4) Explain concept of virtual memory.

**Set P**



- 5) Explain OG and NG concept.
  - 6) Explain optical mouse.
  - 7) Explain three level memory hierarchy.
  - 8) Explain BIOS.
  - 9) Explain fax modem.
3. A) Answer **any two** of the following : **10**
- 1) Explain MFM recording technique.
  - 2) Explain microprocessor as CPU.
  - 3) Explain interrupt map.
- B) Explain error detection technique. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain FDD with block diagram.
  - 2) Explain interrupts in detail.
  - 3) Explain I/O address map.
5. Attempt **any two** of the following : **14**
- 1) Explain block concept of CPU.
  - 2) Explain keyboard organization.
  - 3) Explain motherboard architecture for OG system.
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**B.Sc. (ECS) – II (Semester – III) (Old) (CGPA) Examination, 2017**  
**Paper – VI : MICROPROCESSORS – I**

Day and Date : Thursday, 30-11-2017

Total Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

- Instructions :** 1) **All questions are compulsory.**  
2) Draw **neat diagram whenever necessary.**  
3) Figures to the **right place indicate full marks.**

1. Choose **correct** alternatives.

**14**

- 1) Stack is a sequence of storage locations which is a part of  
a) Cache                      b) Main                      c) Secondary                      d) None of these
- 2) \_\_\_\_\_ Data manipulation instruction.  
a) SETC                      b) ROR                      c) SKP                      d) TST
- 3) The \_\_\_\_\_ selects the register where result is stored.  
a) Encoder                      b) Decoder                      c) Multiplexer                      d) None of these
- 4) \_\_\_\_\_ is Auxiliary Memory.  
a) Primary                      b) CPU                      c) Secondary                      d) None of these
- 5) Read operation addressed to a stack is known as \_\_\_\_\_ operation.  
a) PUSH                      b) POP                      c) HOLD                      d) None of these
- 6) Tracks are divided into small sections is  
a) Cell                      b) Sector                      c) Bit                      d) None of these
- 7) \_\_\_\_\_ command is activate the peripheral.  
a) Control                      b) Status                      c) Function                      d) None of these
- 8) \_\_\_\_\_ register receives control information from CPU.  
a) Data                      b) Control                      c) Status                      d) None of these

P.T.O.





- 9) \_\_\_\_\_ Is Input Output Processor.  
a) 8086                      b) 8089                      c) 8088                      d) None of these
- 10) To design 128 byte RAM how much address lines are required.  
a) 9                              b) 10                              c) 7                              d) 8
- 11) Mean Time before failure term related to  
a) Access capability                      b) Power Consumption  
c) Reliability                              d) None of these
- 12) Static RAM store information in  
a) Capacitor                              b) Diode matrix  
c) Flip-flop                              d) None of these
- 13) SKIP is \_\_\_\_\_ type of Instruction.  
a) Data transfer                              b) Shift  
c) Program control                              d) Arithmetic
- 14) Data can be transmitted both directions simultaneously in \_\_\_\_\_ system.  
a) Simplex                              b) Half duplex  
c) Full duplex                              d) None of these

2. Attempt **any seven** of the following :

**14**

- 1) Write Instruction Format.
- 2) Draw pin diagram of RAM chip.
- 3) Define Memory Hierarchy. Draw Two Level Memory Hierarchy.
- 4) Define the term Peripheral Devices.
- 5) Write difference between isolated and Memory mapped Input Output.
- 6) Explain Direct Addressing Mode.
- 7) What is Stack ?
- 8) Define Cache Memory.
- 9) Write note on Polling Interrupt.

**Set P**



3. A) Attempt **any two**. 10
- 1) Explain block diagram DMA controller.
  - 2) Discuss Asynchronous data transfer and explain Strobe Method.
  - 3) Explain three address. Two address and one address instruction with example.
- B) Explain the following instruction types. 4
- a) Data Transfer
  - b) Data Manipulation.
4. Attempt **any two**. 14
- 1) Define Memory and explain its different types.
  - 2) Write note on Combinational and Sequential ALU.
  - 3) Explain Associative Memory with block diagram.
5. Attempt **any two**. 14
- 1) Write note on Bit Slice Processor.
  - 2) Explain paging and Segmentation.
  - 3) Write note on any two Popular Electromechanical memory devices.
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**B.Sc. (ECS) – II (Semester – IV) Examination, 2017**  
**Paper – I : OPERATING SYSTEM – II (CGPA)**

Day and Date : Saturday, 2-12-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

***N.B :*** 1) ***All questions are compulsory.***  
2) ***Figures to the right indicates full marks.***

1. Select the **correct** alternatives.

**14**

- 1) Which directory implementation is used in most operating system ?
  - a) Single level directory structure
  - b) Two level directory structure
  - c) Tree directory structure
  - d) Acyclic directory structure
- 2) Which of the following is not advantage of multiprogramming ?
  - a) Increased throughput
  - b) Shorter response time
  - c) Decreased operating system overhead
  - d) Ability to assign priorities to jobs
- 3) The problem of fragmentation arises in
  - a) Static storage allocation
  - b) Stack allocation storage
  - c) Stack allocation with dynamic binding
  - d) Heap allocation
- 4) Deadlock prevention is same as deadlock avoidance.
  - a) True
  - b) False

P.T.O.



- 5) Unix operating system is an
- a) Time sharing operating system
  - b) Multi user operating system
  - c) Multi tasking operating system
  - d) All the above
- 6) A process which has just terminated but has yet to relinquish its resources is called
- a) A suspended process
  - b) A zombie process
  - c) A blocked process
  - d) A terminated process
- 7) MVT suffers from both internal and external fragmentation
- a) True
  - b) False
- 8) Which of the following memory allocation scheme suffers from external fragmentation ?
- a) Segmentation
  - b) Pure demand paging
  - c) Swapping
  - d) Paging
- 9) Identify the odd thing in the services of operating system.
- a) Accounting
  - b) Protection
  - c) Error detection and correction
  - d) Deadlock handling
- 10) Mutual exclusion is a necessary condition for deadlock to occur.
- a) True
  - b) False
- 11) The Banker's algorithm is used
- a) To prevent deadlock in operating system
  - b) To detect deadlock in operating system
  - c) To rectify a deadlock state
  - d) None of the above
- 12) The program is known as \_\_\_\_\_ which interacts with the inner part of called kernel.
- a) Compiler
  - b) Device driver
  - c) Protocol
  - d) Shell



- 13) A general graph directory structure cannot have cycles.
  - a) True
  - b) False
- 14) Information about a process is maintained in a
  - a) Stack
  - b) Translation look aside buffer
  - c) Process control block
  - d) Program control block

2. Answer the following (**Any 7**) : **14**

- 1) What do you mean by fragmentation ?
- 2) State the necessary condition to occur a deadlock.
- 3) Write a note on file operation.
- 4) Explain acyclic graph directory.
- 5) What is deadlock ?
- 6) Write a note on sequential access.
- 7) What are different file attributes ?
- 8) Write a note on context of process.

3. A) Answer **any two** of the following : **10**

- 1) Explain deadlock prevention.
- 2) Explain process states and transitions.
- 3) What are the different allocation methods of file system ? Explain any one in detail.

B) Give the stages in Bankers Algorithm. **4**

4. Answer **any two** of the following : **14**

- 1) Discuss various directory structures in detail.
- 2) Explain Unix operating system architecture with its features.
- 3) Explain deadlock detection and recovery techniques.

5. Answer **any two** of the following : **14**

- 1) What are the different types of access methods in file system ?
- 2) Explain paging and swapping in detail.
- 3) Explain Buffer cache with its advantages and disadvantages.



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**B.Sc. (ECS) – II (Semester – IV) Examination, 2017**  
**Paper – II : OOP USING C++ – II (CGPA)**

Day and Date : Monday, 4-12-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicates full marks.**

1. Select the **correct** alternatives : **14**
- 1) How many types of polymorphisms are supported by C++ ?  
a) 1                      b) 2                      c) 3                      d) 4
  - 2) \_\_\_\_\_ gives the current position of the get pointer.  
a) seekg()              b) seekp()              c) tellg()              d) tellp()
  - 3) When a protected member is inherited in public mode then it becomes \_\_\_\_\_ in the derived class.  
a) private              b) public              c) protected              d) none of these
  - 4) Which of the following statements is correct ?  
a) Base class pointer cannot point to derived class  
b) Derived class pointer cannot point to base class  
c) Pointer to derived class cannot be created  
d) Pointer to base class cannot be created
  - 5) A virtual function can not be a friend of another class.  
a) True                      b) False
  - 6) Which of the following is not a type of inheritance ?  
a) Multiple              b) Multilevel  
c) Distributive              d) Hierarchical
  - 7) An abstract class is one that is not used to create objects.  
a) True                      b) False



- 8) Which of the following is used to make an abstract class ?
- a) Declaring it abstract using static keyword
  - b) Declaring it abstract using virtual keyword
  - c) Making at least one member function as virtual function
  - d) Making at least one member function as pure virtual function
- 9) Which of the following cannot be used with the keyword virtual ?
- a) Class
  - b) Member function
  - c) Constructor
  - d) Destructor
- 10) Which one of the following is the correct way to declare a pure virtual function ?
- a) virtual void Display(void) {0};
  - b) virtual void Display = 0;
  - c) virtual void Display(void) = 0;
  - d) void Display(void) = 0;
- 11) The mechanism of deriving a class from another 'derived class' is known as
- a) Multilevel Inheritance
  - b) Multiple Inheritance
  - c) Hybrid Inheritance
  - d) Hierarchical Inheritance
- 12) Which of the following concepts is used to implement late binding ?
- a) Virtual function
  - b) Operator function
  - c) Const function
  - d) Static function
- 13) Which of the following is a mechanism of static polymorphism ?
- a) Operator overloading
  - b) Function overloading
  - c) Templates
  - d) All of the above
- 14) When a base class is privately inherited by a derived class then public members of base class become \_\_\_\_\_ of the derived class.
- a) Private
  - b) Public
  - c) Protected
  - d) None of these



2. Answer the following (**any 7**) : **14**
- 1) What is stream ?
  - 2) Describe the syntax of the single inheritance in C++.
  - 3) What is exception ?
  - 4) What does polymorphism mean in C++ language ?
  - 5) State the various file mode available in C++.
  - 6) When do we make a class virtual ?
  - 7) What is abstract class in C++ ?
  - 8) When do we use protected visibility specifier to a class member ?
3. A) Answer **any two** of the following : **10**
- 1) Why do we need of pure virtual function ? Explain with a program.
  - 2) Explain the manipulators used in C++.
  - 3) Why is it necessary to include the file iostream in all our C++ program ?
- B) How is an exception is handled in C++ ? Explain with an example. **4**
4. Answer **any two** of the following : **14**
- 1) Explain multiple inheritance with example. What is ambiguity in multiple inheritance.
  - 2) Explain with example array of pointers.
  - 3) Write a program for multilevel inheritance.
5. Answer **any two** of the following : **14**
- 1) How run time polymorphism is achieved in C++ ? Explain with a program.
  - 2) What does **this** pointer point to ? Explain with example.
  - 3) When do we used multiple catch handlers ? Explain with an example.





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**B.Sc. (ECS) – II (Semester – IV) Examination, 2017  
COMPUTER SCIENCE**

**Paper – III : Data Structures and Algorithms Engineering – II (CGPA)**

Day and Date : Tuesday, 5-12-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**Instructions :** 1) **All** questions are **compulsory**.  
2) Figure to the **right** indicates **full** marks.

1. Choose the **correct** alternative : **14**
- 1) In Binary trees nodes with no successor are called  
a) End nodes      b) Terminal nodes      c) Final nodes      d) Last nodes
  - 2) A binary tree whose every node has either zero or two children is called  
a) Complete binary tree      b) Binary search tree  
c) Extended binary tree      d) NULL tree
  - 3) Maximum number of nodes in a branch is called \_\_\_\_\_ of tree.  
a) Width      b) Length  
c) Degree      d) Levels
  - 4) A graph is a tree if it has properties  
a) It is connected      b) There are no cycles  
c) Both a and b      d) None of these
  - 5) In which type of BST traversal we get the sorted data ?  
a) Preorder      b) Inorder  
c) Postorder      d) DFS

P.T.O.



- 6) Which of the following is an application of AOV network ?
- a) Critical path
  - b) Shortest path
  - c) Longest path
  - d) Topological sort
- 7) Which data structure is used in breadth first search of a graph to hold nodes ?
- a) Stack
  - b) Queue
  - c) Tree
  - d) Array
- 8) In AVL Tree, the Balance Factor of each node is either.
- a) 1, 2, 3
  - b) -1, 1, 2
  - c) -1, 0, 1
  - d) 2, 0, -2
- 9) Which of the following sorting technique applied on two sorted lists ?
- a) Insertion Sort
  - b) Radix Sort
  - c) Quick Sort
  - d) Merge Sort
- 10) Which of the following sorting algorithm is of divide and conquer type ?
- a) Bubble Sort
  - b) Insertion Sort
  - c) Quick Sort
  - d) All of these
- 11) The degree of leaf node is
- a) 0
  - b) 1
  - c) -1
  - d) 2
- 12) The complexity of Binary search algorithm is
- a)  $O(n)$
  - b)  $O(\log_2 n)$
  - c)  $O(n^2)$
  - d)  $O(n \log n)$
- 13) The root is processed after its subtrees in \_\_\_\_\_ traversal.
- a) inorder
  - b) preorder
  - c) prepostorder
  - d) postorder
- 14) Number of nodes in a full binary tree of height  $h$  is calculated as
- a)  $2^h - 1$
  - b)  $2 + h - 1$
  - c)  $2^{h-1}$
  - d)  $2^3 - h$
2. Solve **any seven** from the following :
- 1) Define sibling. Give its example.
  - 2) Define the term predecessor and successor with example.



- 3) What is strictly binary tree ? Give its example.
  - 4) What is cyclic graph ? Give its example.
  - 5) What is complete graph ? Give its example.
  - 6) What are the advantages of linear search over binary search ?
  - 7) Define hashing. Give its advantages.
  - 8) What is the difference between B – tree and B+ tree ?
  - 9) What are the advantages of quick sort ?
3. A) Solve **any two** from the following : **10**
- 1) Explain threaded binary tree with example.
  - 2) Write an algorithm for DFS.
  - 3) Write a function for insertion sort.
- B) Explain AVL tree rotations. **4**
4. Solve **any two** from the following : **14**
- 1) Explain different tree traversal techniques with example.
  - 2) Explain adjacency matrix representation of graph with example.
  - 3) Write a program to implement binary search.
5. Solve **any two** from the following : **14**
- 1) Write a function to create binary search tree.
  - 2) Explain the application of AOE network in detail.
  - 3) Write a program to implement Bubble sort.
-



SLR-SZ – 39

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**B.Sc. (E.C.S.) – II (Semester – IV) (CGPA) Examination, 2017**  
**Computer Science (Paper – IV)**  
**SOFTWARE ENGINEERING – II**

Day and Date : Wednesday, 6-12-2017  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*

1. A) Choose **correct** alternatives. **10**
- 1) Which of the following is black box testing
    - A) Basic path testing
    - B) Code path analysis
    - C) Boundary value analysis
    - D) None of the mentioned
  - 2) A square symbol
    - A) Defines a source or destination of the system data
    - B) Represents a process that transforms incoming data flow(s) into outgoing data flows
    - C) Is a data store-data at rest or a temporary repository of the data
    - D) Identifies data flow
  - 3) ER model shows the
    - A) Static view
    - B) Functional view
    - C) Dynamic view
    - D) All the above
  - 4) \_\_\_\_\_ is a data structure in which all non key data element are fully functionally dependent on primary key.
    - A) 1 NF
    - B) 2 NF
    - C) 3 NF
    - D) 4 NF

P.T.O.



- 5) \_\_\_\_\_ feasibility considers cost/benefit analysis of the system.
- |                |               |
|----------------|---------------|
| A) Technical   | B) Boundary   |
| C) Operational | D) Economical |
- 6) Which depicts flow of control in program modules ?
- |               |                      |
|---------------|----------------------|
| A) Flow chart | B) DFD               |
| C) Both A & B | D) None of the above |
- 7) The testing in which code is checked
- |                      |                      |
|----------------------|----------------------|
| A) White box testing | B) Black box testing |
| C) Red box testing   | D) Green box testing |
- 8) The feasibilities studied in preliminary investigation is
- |                            |                         |
|----------------------------|-------------------------|
| A) Technical feasibility   | B) Economic feasibility |
| C) Operational feasibility | D) All of these         |
- 9) Weather forecasting is an example of \_\_\_\_\_ system.
- |                  |                  |
|------------------|------------------|
| A) Deterministic | B) Probabilistic |
| C) Open          | D) None of these |
- 10) DSS means
- |                          |                            |
|--------------------------|----------------------------|
| A) Design Support System | B) Decision Support System |
| C) Deion Support System  | D) Data Support System     |

B) State the following statements true/false.

4

- 1) White Box Testing is related to internal logic of the system.
- 2) The logical association among entities is called relationship.
- 3) Every attribute is defined by its corresponding set of values, called Attributes.
- 4) Top level diagram is also called a context diagram.

2. Answer **any seven** of the following :

14

- 1) What is system analysis ?
- 2) What is structured chart ?
- 3) HIPO stands for.

Set P



- 4) What is software engineering ?
  - 5) SDLC stands for.
  - 6) What is flowchart ?
  - 7) List out qualities of software.
  - 8) State characteristic of system.
  - 9) What Decision tree ?
3. A) Answer **any two** of the following : **10**
- 1) What is file ? Explain the different types of file.
  - 2) Explain different fact finding technique in detail.
  - 3) Design input screen for library system.
- B) Difference between System Analysis & System Design. **4**
4. Answer **any two** of the following : **14**
- 1) What is DFD ? Draw the different symbols of DFD.
  - 2) What is Normalization ? Explain upto 3NF.
  - 3) Define the term-Entity, Attribute & Relationship with example.
5. Answer **any two** of the following : **14**
- 1) What is system testing ? Explain the Black Box & White Box testing.
  - 2) Draw a CLD & First level DFD for Payroll System.
  - 3) Explain Design tools in detail.
-



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**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2017**  
**ORGANIZATION OF PC – II (Paper – V)**

Day and Date : Thursday, 7-12-2017

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right place indicate full marks.*  
3) *Neat diagram must be drawn wherever necessary.*

1. Choose **correct** alternatives :

14

- 1) RISC stands for
  - a) Reduced Instruction Set Computer
  - b) Ready Instruction Set Computer
  - c) Real Instruction Set Computer
  - d) None of these
- 2) \_\_\_\_\_ is Programmable Logic device.
  - a) CPLD
  - b) FPGA
  - c) PLD
  - d) None of these
- 3) Propagation Delay of TTL \_\_\_\_\_
  - a) 10 ns
  - b) 6 ns
  - c) 5 ns
  - d) None of these
- 4) In SSI level \_\_\_\_\_ No. of Gates.
  - a) Less than 5
  - b) Greater than 5
  - c) Less than 10
  - d) None of these
- 5) Noise Margin of TTL \_\_\_\_\_
  - a) 20 mv
  - b) 400 mv
  - c) 100 mv
  - d) None of these
- 6) \_\_\_\_\_ is the first Intel processor with internal cache memory.
  - a) 80286
  - b) 80386
  - c) 80486
  - d) 80586



- 7) 80286 is \_\_\_\_\_ bit Microprocessor.  
a) 16                      b) 8                      c) 32                      d) None of these
- 8) Pentium Processor introduced in \_\_\_\_\_  
a) 1987                      b) 1972                      c) 1993                      d) None of these
- 9) \_\_\_\_\_ protocol used in LAN.  
a) 2                      b) 4                      c) 3                      d) 1
- 10) RJ 45 connector supports \_\_\_\_\_ up to speed.  
a) 10 kbps to 100 kbps                      b) 100 kbps to 10 mbps  
c) 10 mbps to 100 mbps                      d) None of these
- 11) \_\_\_\_\_ is CPU socket used in latest motherboard Intel 865 chip set are  
a) LGA 775                      b) LGA 778  
c) LGA 780                      d) LGA 800
- 12) IN peer to peer network \_\_\_\_\_ computer connected.  
a) 20-30                      b) 30-40  
c) 10-15                      d) None of these
- 13) \_\_\_\_\_ connector are used to connect hub and node  
a) BNC-T                      b) RJ-45  
c) RS-232                      d) None of these
- 14) 80286 is introduced in \_\_\_\_\_  
a) 1987                      b) 1972  
c) 1993                      d) 1982

2. Attempt **any seven** of the following :

**14**

- 1) What is CISC ?
- 2) Explain TTL Logic family.
- 3) What is FAN OUT ?
- 4) Write difference between LAN and WAN.
- 5) Write features of 80286 Microprocessor.

**Set P**





- 6) Define Noise Margin.
- 7) Write advantages of SMD.
- 8) Write pin function of INTR.
- 9) Write note on Multilayer technology.

3. A) Attempt **any two** of the following : **10**

- 1) Write note on FPGA.
- 2) Write note on CPU for Embedded System.
- 3) Explain x-86 families in detail.

B) What is mean by SMT and SMD ? Explain various SMDs. **4**

4. Attempt **any two** of the following : **14**

- 1) What are different IC families and Explain TTL, MOS family in brief ?
- 2) Define Topology and explain different topology in Network.
- 3) Explain in brief HUB and Bridges.

5. Attempt **any two** of the following : **14**

- 1) Draw pin diagram of 80486 and explain any four pins.
- 2) Draw and explain PAL.
- 3) Explain different types of Transmission Media.

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SLR-SZ – 41

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**B.Sc. (E.C.S.) – II (CGPA) (Semester – IV) Examination, 2017**  
**Paper – VI : MICROPROCESSOR – II**

Day and Date : Friday, 8-12-2017  
Time : 10.30 a.m. to 1.00 p.m.

Total Marks : 70

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Multiple Choice Questions :

14

- 1) Address bus of 8086 is \_\_\_\_\_ bit.  
a) 20                      b) 12                      c) 16                      d) 32
- 2) Virtual memory of 80386 is  
a) 64TB                      b) 4GB                      c) 64                      d) 64KB
- 3) 8257 is \_\_\_\_\_ IC.  
a) PPI                      b) PTC                      c) DMA                      d) DAM
- 4) In 8086 instruction queue is \_\_\_\_\_ byte.  
a) 12                      b) 8                      c) 6                      d) 16
- 5) 8255 has \_\_\_\_\_ no of ports.  
a) 2                      b) 3                      c) 4                      d) 8
- 6) STC is \_\_\_\_\_ group of instruction.  
a) arithmetic                      b) logical                      c) data transfer                      d) processor
- 7) \_\_\_\_\_ instruction have implied addressing mode.  
a) MOV                      b) ADD                      c) POP                      d) LXI
- 8) In 8086 \_\_\_\_\_ no of pin is used for mode selection.  
a) Pin 33                      b) Pin 10                      c) Pin 34                      d) Pin 38
- 9) Real memory of 80286 is  
a) 16 MB                      b) 20 MB  
c) 24 MB                      d) None of these

P.T.O.



- 10) \_\_\_\_\_ is logical group of instruction.  
a) MOV                      b) ANI                      c) ADD                      d) POP
- 11) 8253 is \_\_\_\_\_ pin IC.  
a) 24                      b) 40                      c) 20                      d) 16
- 12) In 8086 \_\_\_\_\_ register shows address of next instruction.  
a) BP                      b) AX                      c) IP                      d) SP
- 13) In 8086 \_\_\_\_\_ IC are used for clock generation.  
a) 8282                      b) 8286                      c) 8288                      d) 8284
- 14) The control word of 8255 is \_\_\_\_\_ bit.  
a) 4                      b) 8                      c) 16                      d) 20

2. Answer **any seven** of the following :

**14**

- 1) Write features 8088.
- 2) Draw flag structure in 8086.
- 3) List data transfer group of instruction.
- 4) Give application MMX Pentium.
- 5) Draw control word of 8255.
- 6) Explain pipeline concept of 8086.
- 7) Why we need interfacing ?
- 8) Write features of 80286.
- 9) Write use of segment register.

3. A) Answer **any two** of the following :

**10**

- 1) Explain maximum mode pin functions in detail.
- 2) Write a program to add two 8 bit numbers.
- 3) Explain block diagram of 8255.

B) Write features of 8086.

**4**



4. Answer **any two** of the following : **14**
- 1) Explain features of 80486.
  - 2) Explain memory mapped IO with diagram.
  - 3) Explain architecture of 8086.
5. Answer **any two** of the following : **14**
- 1) Explain minimum mode configuration of 8086.
  - 2) Write a program for arranging data in ascending order.
  - 3) Classify instruction set of 8086 and explain program control group of instructions.
-





- 7) In \_\_\_\_\_ topology adding a new node is very difficult.
- a) Bus
  - b) Star
  - c) Mesh
  - d) Ring
- 8) In a \_\_\_\_\_ connection, two and only two devices are connected by a dedicated link.
- a) Multipoint
  - b) Point-to-point
  - c) (a) and (b)
  - d) None
- 9) PCM is an example of \_\_\_\_\_ conversion.
- a) Digital to analog
  - b) Digital to digital
  - c) Analog to digital
  - d) None of the above
- 10) \_\_\_\_\_ is the loss of energy as the signal propagates outward.
- a) Attenuation
  - b) Distortion
  - c) Noise
  - d) Baud
- 11) The frames which are intimated for receiving are called
- a) Sending window
  - b) Receiving window
  - c) Sender
  - d) Receiver
- 12) \_\_\_\_\_ is the amount of time required for a message to travel from one device to another.
- a) Response time
  - b) Transit time
  - c) Turn around time
  - d) None of the above
- 13) The \_\_\_\_\_ layer is responsible for delivering data units from one station to the next without errors.
- a) Physical
  - b) Transport
  - c) Data link
  - d) Network
- 14) Which one of the following is the multiple access protocol for channel access control ?
- a) CSMA/CD
  - b) CSMA/CA
  - c) Both (a) and (b)
  - d) None of the mentioned



2. Answer the following (**any 7**) : **14**
- 1) Which are the key elements of protocol ?
  - 2) What is meant by congestion ?
  - 3) Explain point to point network in short.
  - 4) Explain types of noise in short.
  - 5) What is P-persistent method ?
  - 6) What is meant by store and forward packet switching ?
  - 7) Explain functions of network layer.
  - 8) Which are the two major classes of routing algorithm ? Discuss in short.
  - 9) What is meant by Internetworks ?
3. A) Answer the following (**any 2**) : **10**
- 1) State the difference between virtual circuit subnet and datagram subnet.
  - 2) Which are the various data link layer services ?
  - 3) Which are the various network criteria ?
- B) Briefly explain design issues for layers. **4**
4. Answer the following (**any 2**) : **14**
- 1) Why TCP/IP model is used to connect multiple networks ? Explain in detail.
  - 2) Explain the architecture of Internet .
  - 3) Explain various channelization methods in detail.
5. Answer the following (**any 2**) : **14**
- 1) Explain distance vector routing with example.
  - 2) Explain Internet checksum in detail.
  - 3) Why Pulse Code Modulation is important in digitization ?



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**B.Sc. (ECS) – III (Semester – V) (CGPA) Examination, 2017**  
**Paper – II : DATABASE MANAGEMENT SYSTEM – I**

Day and Date : Wednesday, 15-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) Figure to the **right** place indicates **full** marks.

1. Choose **correct** alternatives :

**14**

- 1) \_\_\_\_\_ interacts with the system by making the request in the form of query languages.
  - a) Naïve users
  - b) Application programmers
  - c) Sophisticated users
  - d) Specialized users
- 2) What is degree of table with 10 rows and 5 columns ?
  - a) 10
  - b) 5
  - c) 15
  - d) 50
- 3) Unique Key allows NULL value.
  - a) True
  - b) False
- 4) Specialization represents bottom up manner.
  - a) True
  - b) False
- 5) \_\_\_\_\_ is used for backup and archival data.
  - a) Optical storage
  - b) Flash memory
  - c) Tape storage
  - d) Main memory
- 6) \_\_\_\_\_ is a facility to undo the changes made recently which are unwanted.
  - a) Commit
  - b) Savepoint
  - c) Rollback
  - d) None

**P.T.O.**





- 7) \_\_\_\_\_ is used to decompose table into number of tables.
- a) Specialization
  - b) Generalization
  - c) Aggregation
  - d) Normalization
- 8) Network model is invented by \_\_\_\_\_
- a) Peter
  - b) Charles Bachman
  - c) Edger Codd
  - d) None
- 9) \_\_\_\_\_ object is used to change data within database.
- a) Alter
  - b) Change
  - c) Rename
  - d) Update
- 10) Inner join is called as a \_\_\_\_\_
- a) Left outer join
  - b) Left inner join
  - c) Right inner join
  - d) Equi join
- 11) Joining the table itself is called as \_\_\_\_\_
- a) Self join
  - b) Equi join
  - c) Outer join
  - d) Natural join
- 12) \_\_\_\_\_ manages the transfer of the data from the disk to the main memory.
- a) Transaction manager
  - b) Buffer manager
  - c) File manager
  - d) Authorization and integrity manager
- 13) Relational algebra is a \_\_\_\_\_ query language.
- a) Procedural
  - b) Non-procedural
  - c) Simple
  - d) None
- 14) Entities having primary key called
- a) Primary entities
  - b) Strong entities
  - c) Weak entities
  - d) Primary key



2. Answer **any seven** of the following : 14
- 1) Define : a) Tuple            b) Domain.
  - 2) List out the names of database users.
  - 3) Define Schema and Instance.
  - 4) What are the advantages of DBMS ?
  - 5) What is a Nested sub query ? Give one example.
  - 6) What is an Aggregate function ?
  - 7) Differentiate between delete and truncate command.
  - 8) Draw a neat labeled diagram of 2 tier architecture.
  - 9) List out the database languages.
3. A) Answer **any two** of the following : 10
- 1) Differentiate between Network and hierarchical model.
  - 2) Explain Generalization with example.
  - 3) Explain Primary key with example.
- B) Differentiate between DBMS and Traditional File System. 4
4. Answer **any two** of the following : 14
- 1) What is dependency ? Explain it with its types.
  - 2) Explain architecture of DBMS with suitable diagram.
  - 3) Explain SQL Date functions with example.
5. Answer **any two** of the following : 14
- 1) What is ER-model ? Explain its notations in detail with example.
  - 2) Explain the concept of indexing with example.
  - 3) What is normalization ? Explain the various forms of normalization in detail.



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**B.Sc. (Entire Computer Science) – III (Semester – V) Examination, 2017**  
**COMPUTER SCIENCE**  
**Core Java (Paper – III)**  
**(CGPA Pattern)**

Day and Date : Thursday, 16-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. A) Choose **correct** alternatives. **10**

- 1) Which of the following methods return the value as a double ?
  - a) doubleValue()
  - b) converDouble()
  - c) getDouble()
  - d) getDoubleValue()
- 2) Which of these process occur automatically by java run time system ?
  - a) Serialization
  - b) Garbage collection
  - c) File filtering
  - d) All of the mentioned
- 3) Which of these keyword must be used to inherit a class ?
  - a) Super
  - b) this
  - c) extent
  - d) extends
- 4) Which of these Class is superclass of every class in Java ?
  - a) String class
  - b) Object class
  - c) Abstract class
  - d) ArrayList class
- 5) Literals in java must be preceded by which of these ?
  - a) L
  - b) I
  - c) D
  - d) L and I

P.T.O.



- 6) Which of these methods must be made static ?
- a) main()
  - b) delete()
  - c) run()
  - d) finalize()
- 7) Which of these keywords is used to generate an exception explicitly ?
- a) try
  - b) finally
  - c) throw
  - d) catch
- 8) Which of the following is correct way of importing an entire package 'pkg' ?
- a) import pkg.
  - b) Import pkg.
  - c) import pkg.\*
  - d) Import pkg.\*
- 9) Which of these can be overloaded ?
- a) Methods
  - b) Constructors
  - c) All of the mentioned
  - d) None of the mentioned
- 10) What does AWT stands for ?
- a) All Windows Tools
  - b) All Writing Tools
  - c) Abstract Window Toolkit
  - d) Abstract Writing Toolkit

B) State **true/false** :

4

- 1) FileReader and FileWriter is a byte stream class.
- 2) The class Throwable is at the top of the exception class hierarchy.
- 3) A class that is abstract may not be instantiated.
- 4) Frames and applets can be used together in program.

2. Solve **any seven** from the following :

14

- 1) Static block.
- 2) Byte code.
- 3) Final keyword.
- 4) Object class.

Set P



- 5) Adapter classes.
  - 6) Java history.
  - 7) Static methods.
  - 8) Access specifiers.
  - 9) JRE.
3. A) Attempt **any two** : **10**
- 1) What is constructor ? Explain the types of constructor in Java.
  - 2) Write a program to demonstrate multilevel inheritance.
  - 3) Explain any two character stream classes.
- B) Explain event listener interface. **4**
4. Attempt **any two** : **14**
- 1) Explain Applet life cycle.
  - 2) Write a short note on synchronization.
  - 3) Explain throw clause with example.
5. Attempt **any two** : **14**
- 1) Explain different types of layout managers.
  - 2) Explain Hash map with example.
  - 3) Explain wait() and notify() method by considering inter thread communication.
-



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**B.Sc. (ECS) – III (Semester – V) (CGPA) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – IV : Theory of Computer Science**

Day and Date : Friday, 17-11-2017

Total Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

**Instructions :** 1) Figure to the **right** indicates **full** marks.  
2) **All** questions are **compulsory**.

1. Select **correct** alternative from the following : **14**

- 1) All possible subset of set is known as  
a) sub set      b) power set      c) super set      d) none of these
- 2) Proper suffixes of the string abc are  
a) { $\epsilon$ , c, bc, abc}      b) { $\epsilon$ , c, bc}      c) { $\epsilon$ , a, ab, abc}      d) { $\epsilon$ , a, ab}
- 3) Number of states requires accepting string ends with 101  
a) 3      b) 2      c) 4      d) None of these
- 4) The transition function  $\delta: Q \times (\Sigma \cup \{\epsilon\}) \times \Gamma \rightarrow Q \times \Gamma^*$  is of  
a) PDA      b) FSM  
c) Turing Machine      d) Mealy machine
- 5) If  $L(r) = \{a, b, aa, bb, \dots\}$  then  $r =$   
a)  $(a + b)$       b)  $(a + b)^*$       c)  $(a + b)^+$       d) None of these
- 6) Pumping lemma is used to proving given language is  
a) irregular      b) context sensitive  
c) restricted      d) none of these
- 7) In PDA one situation has more than one transition then it is known as  
a) PDA      b) DPDA      c) NPDA      d) Stack

P.T.O.



- 8) The language accepted by finite automates are described or represented by simple expression called  
 a) Grammer      b) Regular Set      c) Language      d) Regular Expression
- 9) NFA is more powerful than DFA.  
 a) True      b) False
- 10) If  $L(r) = \{a, b, aa, bb, \dots\}$  then  $r =$   
 a)  $(a + b)$       b)  $(a + b)^*$       c)  $(a + b)^+$       d) None of these
- 11) If rightmost and leftmost production is single non-terminal then it is known as \_\_\_\_\_ production.  
 a) unit      b) self      c) cross      d) none of these
- 12) If  $L(r) = \{a, aa, aaa, aaaa, aaaaa, \dots\}$  then  $r =$   
 a)  $a^*$       b)  $a^+$       c)  $a^5$       d)  $a^4$
- 13) A finite automation with stack is known as  
 a) FA      b) TM      c) DFA      d) PDA
- 14) Context free grammar has \_\_\_\_\_ tuples.  
 a) 4      b) 5      c) 6      d) 7

2. Solve any seven.

14

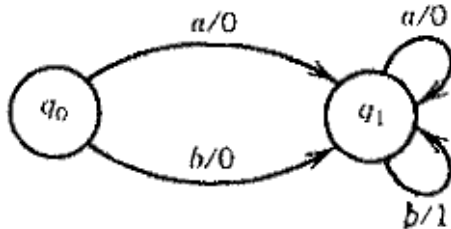
- 1) Let  $R = \{(1, 2), (2, 3), (2, 4)\}$  be a relation in  $\{1, 2, 3, 4\}$ . Find  $R^*$ .
- 2) Define PDA. Give pictorial representation of PDA.
- 3) Explain notations used in CFG.
- 4) Design Moore machine for accepting 2's complement of binary number.
- 5) Find a CFG for each of the language defined by the following regular expression .  
 i)  $a . b^*$       ii)  $a^* . b^*$
- 6) Define closure properties of relation.
- 7) Define CFG and CFL.
- 8) Show that  $(a + b)^* = (a + b)^* + (a + b)^*$ .
- 9) Construct DFA to Accept a string ending with abb Over  $\{a, b\}$ .

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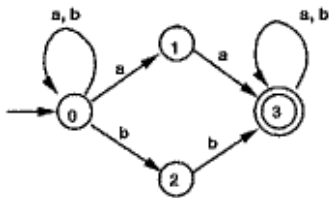


3. A) Solve **any two** of the following.

- 1) Design TM for  $L = \{a^n b^n \mid n > 1\}$ . 5
- 2) Construct Moore machine equivalent to relay machine. 5



3) Construct DFA for NFA. 5



B) Show that  $(a.b)^* \neq a^*.b^*$ . 4

4. Solve **any two** of the following.

- A) Construct GNF for following grammar. 7  
 $S \rightarrow S + S \mid S^*S \mid id$
- B) Construct DFA for accepting string over  $\{a, b, c\}$  which string start with 'a' and not Having substring 'abc' in it. 7
- C) Construct DFA for regular expression 7  
 $(0 + 1)^* + 1(0 + 1)^*$

5. Solve **any two** of the following.

- A) What is pumping lemma ? Using pumping lemma check  $\{a^p \mid p \text{ is prime}\}$  is regular or not. 7
- B) Check whether the following grammar is ambiguous or not ; if ambiguity found remove the ambiguity and rewrite an equivalent grammar. 7  
 $E \rightarrow E + E \mid E^*E \mid id$
- C) Convert the following right linear grammar to equivalent left linear grammar 7  
 $S \rightarrow bB$   
 $B \rightarrow bC$   
 $B \rightarrow aB$   
 $C \rightarrow a$   
 $B \rightarrow b$





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**B.Sc. (E.C.S.) – III (Semester – V) (CGPA) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – V : Web Technology and E-Commerce – I**

Day and Date : Saturday, 18-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

***Instruction : All questions are compulsory.***

1. Choose the **correct** alternatives. **14**

- 1) What class does the ASP.NET Web Form class inherit from by default ?  
A) System.Web.UI.Page                      B) System.Web.UI.Form  
C) System.Web.GUI.Page                     D) System.Web.Form
- 2) Attribute must be set on a validator control for the validation to work.  
A) ControlToValidate                        B) ControlToBind  
C) ValidateControl                          D) Validate
- 3) You can have only one Global.asax file per project.  
A) True                                        B) False
- 4) \_\_\_\_\_ is a special subfolder within the windows folder that stores the shared .NET component.  
A) /bin                                         B) GAC  
C) Root                                         D) None of these
- 5) What is the base class from which all Web forms inherit ?  
A) Master Page                                B) Page Class  
C) Session Class                              D) None of the above
- 6) If one has two different web form controls in a application and if one wanted to know whether the values in the above two different web form control match what control must be used ?  
A) DataList                                    B) GridView  
C) CompareValidator                         D) ListView



- 7) Which of the following is true ?
- A) IsPostBack is a method of System. UI.Web.Page class
  - B) IsPostBack is a method of System.Web.UI.Page class
  - C) IsPostBack is a read-only property of System.Web.UI.Page class
  - D) None of these
- 8) Which of the following languages are used to write server side scripting in ASP.NET ?
- A) C-sharp
  - B) VB
  - C) Both C-sharp and VB
  - D) C++
- 9) The type of code found in Code-Behind class is
- A) Server-side code
  - B) Client-side code
  - C) Both A and B
  - D) None of the above
- 10) Which is not function of E-commerce ?
- A) Marketing
  - B) Advertising
  - C) Warehousing
  - D) All of the above
- 11) ASP is a client side scripting language.
- A) True
  - B) False
- 12) EDI stands for
- A) Electronic Database Interchange
  - B) Electronic Data Interchange
  - C) Electronic Data Information
  - D) Electronic Database Information
- 13) \_\_\_\_\_ is part to play in a competitive strategy.
- A) ICT
  - B) CTI
  - C) IT
  - D) NIIT
- 14) The use of E-Commerce
- A) Reduce the administrative cost
  - B) To provide greater reliability of supply
  - C) Cut out the intermediaries in the supply chain
  - D) All of these



2. Answer the following (**Any seven**) : **14**
- 1) What is the use of @import directive ?
  - 2) List out the event ordering of Master Page.
  - 3) List out the various application folders.
  - 4) What is the use of Skin file ?
  - 5) Define E-commerce.
  - 6) What is the use of DropDownList ?
  - 7) What is IsPostBack ?
  - 8) What is the use of InitialValue required field validator ?
  - 9) Give the need of master page.
3. A) Answer the following (**Any two**) : **10**
- 1) Explain compilation process of ASP page in detail.
  - 2) Differentiate client-side and server-side validation.
  - 3) What is Supply chain ? Explain with suitable diagram.
- B) Explain ASP Page event in detail. **4**
4. Answer the following (**Any two**) : **14**
- 1) Explain Tread cycle of E-commerce in detail.
  - 2) Explain the concept of Nesting Master pages with example.
  - 3) What is use of server control ? Explain the TextBox and ListBox control in detail.
5. Answer the following (**Any two**) : **14**
- 1) What is validation ? What are the different types of validation control ? Explain in detail any one.
  - 2) Explain Porter's value chain in detail.
  - 3) What is @page Directive ? Explain in detail.
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**B.Sc. (E.C.S.) – III (Semester – V) (CGPA) Examination, 2017**  
**Paper – VI : VISUAL PROGRAMMING AND APPLICATION**  
**SOFTWARE – I**

Day and Date : Monday, 20-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Note :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose the **correct** alternative for the following : **14**
- 1) \_\_\_\_\_ specification defines a set of rules that enables interoperability in .net framework.  
a) CTS                      b) CLS                      c) CLR                      d) MSIL
  - 2) Console.WriteLine() here WriteLine() method is  
a) static                      b) nonstatic                      c) basic                      d) abstract
  - 3) Unboxing is \_\_\_\_\_ type of conversion.  
a) implicit                      b) explicit                      c) assignment                      d) None
  - 4) To specify a number to be decimal type, we must append the character  
a) f                      b) a                      c) d                      d) m
  - 5) How much byte are stored by sbyte data type in C# ?  
a) 1 byte                      b) 2 byte                      c) 4 byte                      d) 8 byte
  - 6) \_\_\_\_\_ keyword used in C# which is a reference to the object that called the method.  
a) this                      b) is                      c) like                      d) none
  - 7) A \_\_\_\_\_ class can not also be an abstract class.  
a) sealed                      b) partial                      c) static                      d) base

P.T.O.



- 8) All data types in C# treated as Objects.  
a) True                      b) False
- 9) C# does not supports structures.  
a) True                      b) False
- 10) Every class must include a Main method in its definition.  
a) True                      b) False
- 11) Array elements store at on \_\_\_\_\_ data structure.  
a) stack                      b) heap                      c) both a and b      d) none of these
- 12) All the bitwise operator have same level of precedence in C#.  
a) True                      b) False
- 13) Public method of \_\_\_\_\_ class are accessible in only class.  
a) Public                      b) Private  
c) Protected                      d) None of these
- 14) The default size of an ArrayList array is  
a) 4                      b) 8                      c) 16                      d) 20

2. Answer the following (**any 7**) :

**14**

- 1) Define Indexer.
- 2) Explain Write Only Property.
- 3) Describe Assembly Manifest.
- 4) Define CLR.
- 5) Explain Cross Language Support.
- 6) Define Inclusion Polymorphism.
- 7) Define Enumeration.
- 8) Explain Threading.
- 9) Define Jagged Array.



3. A) Answer the following (**any 2**) : **10**
- 1) What is static constructor ? Write a program for static constructor.
  - 2) Write a program for Thread Synchronization.
  - 3) Explain Bitwise operator with example.
- B) What is Parameter array ? Explain with example. **4**
4. Attempt the following (**any 2**) : **14**
- 1) What is Has a relation of a class ? Explain with example.
  - 2) Define an Interface. Write a program to implement a property through interface.
  - 3) Explain the different File Handling classes.
5. Answer the following (**any 2**) : **14**
- 1) Write a program for static class in C#.
  - 2) What is operator overloading ? Write a program for overloading true and false operator.
  - 3) What is Exception Handling ? Explain Custom Exception Handling with example.
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**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017  
DATA COMMUNICATION AND NETWORKING – II (Paper – I)**

Day and Date :Tuesday, 31-10-2017  
Time :2.30 p.m to 5.00 p.m.

Max. Marks :70

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose **correct** alternatives. **14**

- 1) Transmission control protocol is a
  - a) Connection oriented Protocol
  - b) Connectionless Protocol
  - c) Unreliable Protocol
  - d) None of above
- 2) In TCP segment, sequence number is a \_\_\_\_\_ bit field.
  - a) 48
  - b) 16
  - c) 32
  - d) 64
- 3) The UDP packets have fixed-size header of \_\_\_\_\_ bytes.
  - a) 32
  - b) 48
  - c) 64
  - d) 8
- 4) SMTP uses \_\_\_\_\_ TCP port.
  - a) 25
  - b) 23
  - c) 110
  - d) 53
- 5) Decryption algorithm \_\_\_\_\_
  - a) Encrypt input data
  - b) Decrypts the encrypted data
  - c) Both a) and b)
  - d) None of above
- 6) \_\_\_\_\_ protocol is used for transferring mail over internet.
  - a) POP
  - b) SMTP
  - c) HTTP
  - d) SNMP
- 7) Repeater operates at \_\_\_\_\_ layer.
  - a) Network
  - b) Physical
  - c) Transport
  - d) None of above



- 8) \_\_\_\_\_ is a symmetric algorithm in cryptography.  
a) DSE                      b) DSA                      c) RSA                      d) All of above
- 9) SET stands for  
a) State Eligibility Test                      b) Secure Electronics Trade  
c) Secure Election Transaction              d) Secure Electronic Transaction
- 10) The interface between the BTS and the BSC is known as  
a) Um interface                      b) A bis interface  
c) A interface                      d) S interface
- 11) If an IP address starts with a bit sequence of 10, it is a class  
a) A                      b) B                      c) C                      d) D
- 12) MIME stands for  
a) Multipurpose Internet Mail External      b) Multipurpose Internet Mail Extension  
c) Multipurpose Internet Mail E-mail      d) Multipurpose Internet Mail Enquiry
- 13) A hash function guarantees integrity of a message. It guarantees that message has not be  
a) Replaced                      b) Over view              c) Left                      d) Changed
- 14) IP Sec is designed to provide the security at \_\_\_\_\_ layer.  
a) Network                      b) Transport  
c) Physical                      d) Data Link

2. Answer the following (**any 7**) :

**14**

- 1) List different network connecting devices.
- 2) List four applications of video conferencing.
- 3) What is message confidentiality ?
- 4) What is hub ?
- 5) What is digital signature ?





- 6) List 1 bit flags used in TCP segment.
  - 7) What is network security ?
  - 8) What is the use of web server ?
  - 9) What is POP protocol ?
  - 3. A) Answer **any two** of the following : **10**
    - 1) Write a note on three way handshaking mechanism.
    - 2) What is firewall ? Explain packet filter firewall in detail.
    - 3) Which are the various roles and responsibilities of network administrator.
  - B) Explain gateway in detail. **4**
  - 4. Answer **any two** of the following : **14**
    - 1) What is cryptography ? Explain types of cryptography in detail.
    - 2) Explain ARP protocol in detail.
    - 3) Explain IPSec in detail with transport mode and tunnel mode.
  - 5. Answer **any two** of the following : **14**
    - 1) What is PGP ? Explain working of PGP in detail.
    - 2) What is GPS system ? Explain in detail with its applications.
    - 3) Explain Proxy server in detail.
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**B.Sc. (ECS) (Part – III) (Semester – VI) (New CGPA)**

**Examination, 2017**

**Paper – II : DATABASE MANAGEMENT SYSTEM – II**

Day and Date : Wednesday, 01-11-2017

Total Marks : 70

Time : 2.30 p.m. to 5.00 p.m.

**Instructions :** 1) **All questions are compulsory.**

2) **All questions carry equal marks.**

1. Choose **correct** alternatives.

14

- 1) If a transaction acquires exclusive lock, then it can perform \_\_\_\_\_ operation.
  - a) read
  - b) write
  - c) read and write
  - d) update
- 2) Which of the following is not a property of transactions ?
  - a) Accuracy
  - b) Concurrency
  - c) Isolation
  - d) Durability
- 3) \_\_\_\_\_ is special kind of stored procedure which fires automatically when the condition is violated.
  - a) function
  - b) procedure
  - c) cursor
  - d) trigger
- 4) The \_\_\_\_\_ data type is used to match the data type of column value and data type of that variable.
  - a) char
  - b) varchar2
  - c) %type
  - d) %rowtype
- 5) The \_\_\_\_\_ section of code block is optional section.
  - a) declare
  - b) begin
  - c) end
  - d) none of these
- 6) The \_\_\_\_\_ is default name of implicit cursor.
  - a) User given
  - b) sql
  - c) implicit
  - d) none of these

P.T.O.



- 7) The \_\_\_\_\_ returns only one value.
  - a) procedure
  - b) function
  - c) both a and b
  - d) none of these
- 8) The \_\_\_\_\_ section is used to handle user defined errors.
  - a) declare
  - b) begin
  - c) exception
  - d) end
- 9) In \_\_\_\_\_ more than one functions, procedures and cursors are integrated.
  - a) Self
  - b) package
  - c) both a and b
  - d) none of these
- 10) PL/SQL is not a procedural language.
  - a) True
  - b) False
- 11) \_\_\_\_\_ level describes what data is stored in the database and relationship among them.
  - a) Physical
  - b) Logical
  - c) Conceptual
  - d) none of these
- 12) The \_\_\_\_\_ command is used to open cursor for loops.
  - a) Open
  - b) Fetch
  - c) Parse
  - d) none of these
- 13) The \_\_\_\_\_ is the default mode of parameter.
  - a) In
  - b) Out
  - c) Check
  - d) Default
- 14) The Database trigger will fire when the table is TRUNCATED.
  - a) True
  - b) False

2. Solve **any seven**.

**14**

- 1) How to declare constant in PL/SQL.
- 2) What are the two types of serializability ?
- 3) What is difference between SQL and PL/SQL ?
- 4) What are the applications of cursor ?
- 5) Define the phases of two phase locking protocol.



- 6) Define shadow paging.
- 7) Give the syntax of trigger.
- 8) Give any two names of Oracle named exception handlers.
- 9) Why fetch statement is used in cursor ?

3. A) Solve **any two**. **10**

- 1) Explain deadlock prevention in detail.
- 2) Explain transaction states in detail.
- 3) What are difference between function and procedure with example ?

B) Write a PL/SQL procedure for calculate digit sum. **4**

4. Solve **any two** questions. **14**

- 1) What is package ? Explain package with example.
- 2) Write a PL/SQL function block for calculate face value of any number.
- 3) What is cursor ? Explain types of cursor with example.

5. Solve **any two** questions. **14**

- 1) Create a cursor for raise salary of computer department employee by 5% using cursor for loops.
- 2) Describe in detail to recover database with algorithm.
- 3) Create a trigger for handling any two user defined constraints.





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**B.Sc. (ECS) (Part – III) (Semester – VI) (New CGPA)  
Examination, 2017  
Paper – III : COMPUTER SCIENCE  
Advanced Java**

Day and Date : Thursday, 2-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *Figures to the right indicate full marks.*

1. Choose the **correct** alternatives. **14**
- 1) Which classes are used for connection-oriented socket programming ?
    - a) Socket
    - b) ServerSocket
    - c) Both a and b
    - d) None of the above
  - 2) In InetAddress class which method returns the host name of the IP Address
    - a) Public String getHostName()
    - b) Public String getHostAddress()
    - c) Public Static InetAddress getLocalHost()
    - d) None of the above
  - 3) The DatagramSocket and DatagramPacket classes are not used for connection-less socket programming.
    - a) True
    - b) False
  - 4) The Swing Component classes that are used in Encapsulates a mutually exclusive set of buttons
    - a) AbstractButton
    - b) ButtonGroup
    - c) JButton
    - d) ImageIcon
  - 5) Which class is used to create a pop-up list of items from which the user may choose ?
    - a) List
    - b) Checkbox
    - c) Labels
    - d) Choice

P.T.O.



- 6) \_\_\_\_\_ component may not have Title bar and Menu bar.
- a) JPanel
  - b) JFrame
  - c) JComponent
  - d) JWindow
- 7) Which is used to call the stored procedures and functions ?
- a) CallableStatement Interface
  - b) PreparedStatement Interface
  - c) Both a and b
  - d) None of the above
- 8) Which interface provides methods to execute queries with the database ?
- a) Connection interface
  - b) Statement interface
  - c) ResultSet interface
  - d) None of the above
- 9) Which method of class is used to register the driver class ?
- a) forName()
  - b) getConnection()
  - c) createStatement()
  - d) executeQuery()
- 10) \_\_\_\_\_ is called for each HTTPRequest.
- a) init()
  - b) Service()
  - c) update()
  - d) dead()
- 11) Servlet technology is used to create web application
- a) True
  - b) False
- 12) Which methods are used to bind the objects on HttpSession instance and get the objects ?
- a) setAttribute
  - b) getAttribute
  - c) Both a and b
  - d) None of the above
- 13) A JSP page consists of which tags ?
- a) HTML tags
  - b) JSP tags
  - c) Both a and b
  - d) None of the above
- 14) Which tag is used to execute java source code in JSP ?
- a) Declaration Tag
  - b) Scriptlet Tag
  - c) Expression Tag
  - d) None of the above



2. Answer **any seven** from the following : **14**
- 1) Define proxy servers.
  - 2) Define the term DNS. Give its example.
  - 3) Explain Radio Button component in swing.
  - 4) What is the use of JTree component in swing ?
  - 5) List the methods of DriverManager class.
  - 6) List the advantages of Type-4 driver in JDBC.
  - 7) What is the purpose of using filters in servlet programming ?
  - 8) What is the advantage of JSP over servlet ?
  - 9) Define JSP expression element. Give its syntax.
3. A) Answer **any two** from the following : **10**
- 1) What is the use of Icon and Label in swing ? Explain with example.
  - 2) Explain CallableStatement interface.
  - 3) Explain InetAddress class with example.
- B) Write note on page directive in JSP. **4**
4. Answer **any two** from the following : **14**
- 1) What is servlet ? Explain different steps in servlet life cycle.
  - 2) Explain different types of implicit objects used in JSP.
  - 3) Write a servlet program to handle doPost() method.
5. Answer **any two** from the following : **14**
- 1) Write a JDBC program to insert employee details in Employee table and display all the records (use PreparedStatement interface).
  - 2) Explain Scroll panes in Swing with suitable example.
  - 3) Design a JSP page that accepts Book name, Publisher name and Price when user clicks on submit button display the information entered on the next page.



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**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017  
COMPILER CONSTRUCTION (Paper – IV)**

Day and Date : Friday, 3-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

**Instructions :** 1) *All questions are compulsory.*  
2) *All questions carry equal marks.*

1. Choose **correct** alternatives.

14

- 1) The \_\_\_\_\_ determines the semantic meaning of the source string.
  - a) Lexical analyzer
  - b) Syntax analyzer
  - c) Semantic analyzer
  - d) None of these
- 2) Once an intermediate-code program is partitioned into \_\_\_\_\_ we represent the flow of control between them by a
  - a) Basic blocks and flow graphs
  - b) Flow graphs and basic blocks
  - c) Directed acyclic graph
  - d) None of these
- 3) The attributes that can be computed from the values of the attributes at the parent's of that node in the parse tree is called as
  - a) Inherited
  - b) Synthesized
  - c) Both a and b
  - d) None of these
- 4) \_\_\_\_\_ will try different productions, backing up when a parse fails.
  - a) backtracking
  - b) predictive
  - c) intermediate code
  - d) back patching

P.T.O.





- 5) In \_\_\_\_\_ a node in a flow graph dominates another if every path to the latter must go through the former.
- a) inner loops                      b) reducible  
c) pre-header                      d) dominators
- 6) In \_\_\_\_\_ however, the position of an activation record for a procedure is not known until run time.
- a) stack allocation                      b) heap allocation  
c) static allocation                      d) both b and c
- 7) This parser uses \_\_\_\_\_ derivation process.
- a) Topdown parser                      b) Bottom up Parser  
c) Either a or b                      d) Both a and b
- 8) \_\_\_\_\_ begin at the source string and try to apply reductions to arrive at the start symbol.
- a) LL parser                      b) LR parser  
c) None of these                      d) All of above
- 9) All the items whose (period operator) are not at the leftmost end of the RHS of the rule
- a) kernel items                      b) non kernel items  
c) both a and b                      d) none of these
- 10) \_\_\_\_\_ is a parser with single lookahead terminal.
- a) SLR                      b) CLR                      c) LALR                      d) Shift reduce
- 11) The LR-parsing method is the most general \_\_\_\_\_ shift-reduce parsing method.
- a) backtracking                      b) non backtracking  
c) both a and b                      d) none of these
- 12) \_\_\_\_\_ engines that produce collections of routines for walking a parse tree and generating intermediate code.
- a) Scanner generators                      b) Syntax-directed translation  
c) Data-flow analysis                      d) Code-generator generators



- 13) For the grammar  $S \rightarrow (L) | a$   $L \rightarrow L, S | S$  the First (S) =  
a) {(,a}                    b) {(,),a}                    c) {),a}                    d) {(,)}
- 14) The pattern  $[a-zA-Z][a-zA-Z0-9]^*$  is used for representing  
a) identifier                    b) keyword  
c) operator                    d) number

2. Solve **any seven** from following questions. **14**

- 1) Define cross compilers.
- 2) Convert the following grammar in left factored form.  
 $S \rightarrow aAb | aBC | aAbG$
- 3) Role of lexical analyzer.
- 4) Define Regular Definition.
- 5) Construct the DAG for the following string.  
 $X := -a*b + -a*b$
- 6) Define the terms            a) dominators            d) natural loops
- 7) Explain Backtracking with example.
- 8) Design the dependency graph for the following grammar.  
 $E \rightarrow E1 + E2$   
 $E \rightarrow E1 * E2$
- 9) What is Global Register Allocation ?

3. A) Solve **any two** from following questions. **10**

- 1) Consider the grammar.  
 $S \rightarrow TL$   
 $T \rightarrow \text{int}$   
 $T \rightarrow \text{float}$   
 $T \rightarrow \text{char}$   
 $T \rightarrow \text{double}$   
 $L \rightarrow L1, \text{id}$   
 $L \rightarrow \text{id}$   
Compute the inherited attributes, annotated parse tree for the computation of inherited attributes for the following string.  
`int a,b,c;`



- 2) What is runtime storage ? Explain the runtime storage allocation in detail.
- 3) Explain compiler construction tools.
- B) Construct recursive descent parser for the following grammar. 4
- $E \rightarrow \text{num } T$   
 $T \rightarrow * \text{ num } T | \epsilon$
4. Solve **any two** from the following questions. 14
- 1) Check whether following grammar is Canonical LR(1) grammar or not.  
 $S \rightarrow AaAb | BbBa, A \rightarrow \epsilon, B \rightarrow \epsilon$
- 2) Write the Intermediate Representation like postfix notation, syntax tree and three address code for the following expression  
 $(a - b) * (c + d) - (a + b)$
- 3) Write a note on Peephole Optimization.
5. Solve **any two** from the following questions. 14
- 1) Construct LL(1) parse table for following grammar :  
 $S \rightarrow aBDh \quad B \rightarrow cC \quad C \rightarrow bC | \epsilon \quad D \rightarrow EF \quad E \rightarrow g | \epsilon \quad F \rightarrow f | \epsilon$
- 2) Define Code optimization. Explain principle sources of code optimization.
- 3) Explain Activation Record. Draw the Activation Record for the factorial program.
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**B.Sc. – III (ECS) (Semester – VI) (New) (CGPA) Examination, 2017  
Paper – V : WEB TECHNOLOGY AND E-COMMERCE – II**

Day and Date : Monday, 6-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose **correct** alternatives.

**14**

- 1) \_\_\_\_\_ control is required for every AJAX page to manage the JavaScript files sent to the client and the communication between client and server.
  - A) Update panel
  - B) Script Manager
  - C) AsyncPostBack Trigger
  - D) None of the above
- 2) We store \_\_\_\_\_ connection string in ASP.NET.
  - A) Machine.config file
  - B) Web.config file
  - C) MasterPage file
  - D) None of the above
- 3) How many types of authentication ASP.NET supports ?
  - A) Windows Authentication
  - B) NET Passport Authentication
  - C) Forms Authentication
  - D) All of the above
- 4) \_\_\_\_\_ is not a member of ADODBCommand object.
  - A) ExecuteScalar
  - B) ExecuteStream
  - C) Open
  - D) ExecuteReader
- 5) \_\_\_\_\_ stores default Session data in ASP.Net.
  - A) StateServer
  - B) Session Object
  - C) InProcess
  - D) All of the above

**P.T.O.**



- 6) \_\_\_\_\_ does not have any visible interface.
- A) Datagrid
  - B) Repeater
  - C) DropDownList
  - D) Datalist
- 7) EDI stands for
- A) Electronic Data Interchange
  - B) Electronic Data Interface
  - C) Exchange Data Information
  - D) None of these
- 8) \_\_\_\_\_ are site navigation technique.
- A) Tree
  - B) Menu
  - C) Sitemap
  - D) All
- 9) \_\_\_\_\_ are the several execute methods of ADO.NET.
- A) ExecuteScalar
  - B) ExecutenonQuery
  - C) ExecuteReader
  - D) All
- 10) Windows-Based Authentication is well suited for
- A) Internet environment
  - B) Public Web site
  - C) Desktop application
  - D) None of the above
- 11) Cookies can store \_\_\_\_\_ type of data.
- A) String
  - B) Date Time
  - C) System.Int32
  - D) None of the above
- 12) On \_\_\_\_\_ Operating System ASP.NET can run.
- A) Windows XP Professional
  - B) Windows 2000
  - C) A and B
  - D) None
- 13) \_\_\_\_\_ denotes the web control associated with the table control function of ASP.NET
- A) DataList
  - B) ListBox
  - C) TableRow
  - D) All
- 14) While shopping online \_\_\_\_\_ are used to keep track of what the customer has placed in the shopping cart.
- A) Spiders
  - B) Cookies
  - C) Registers
  - D) Proxy servers



2. Answer the following (**Any seven**): **14**
- 1) Explain Menu control.
  - 2) Explain Query string with example.
  - 3) What is Http Status code ?
  - 4) Explain Session.
  - 5) Explain E-shop.
  - 6) Define Stored Procedure.
  - 7) Explain uses of AJAX.
  - 8) Explain Tracing.
  - 9) What are the technologies used by AJAX ?
3. A) Answer the following (**Any two**): **10**
- 1) What is cookie ? Explain types of cookies with example.
  - 2) Explain Multiview control with example.
  - 3) Write a short note on Authentication and Authorization in ASP.NET.
- B) Explain various modes of online payments. **4**
4. Answer the following (**Any two**): **14**
- 1) Define E-market. Explain advantages and disadvantages of E market.
  - 2) Explain different client side state management technique in ASP.NET.
  - 3) What is AJAX ? What are the real web applications of AJAX currently running in the market ? Explain Timer control with example.
5. Answer the following (**Any two**): **14**
- 1) Explain website Evolution model.
  - 2) List Site navigation techniques present in ASP.NET. Explain sitemap path using XML file.
  - 3) Explain ADO.NET architecture with suitable diagram.



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**B.Sc. (ECS) – III (Semester – VI) (New CGPA) Examination, 2017  
VISUAL PROGRAMMING AND APPLICATION SOFTWARE – II (Paper – VI)**

Day and Date : Tuesday, 7-11-2017  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

1. Choose **correct** alternatives: **14**

1) SDI Applications are used to show multiple instances of the same type of form.

- a) True b) False

2) Inoke the related event by supplying an event handler using the \_\_\_\_\_ operator.

- a) = b) =+ c) == d) +=

3) \_\_\_\_\_ is used to change single line text.

- a) Text Area b) TextBox c) Combo box d) Listbox

4) \_\_\_\_\_ assemblies can be stored in global assembly cache.

- a) Shared Assemblies b) Private Assemblies  
c) Public Assemblies d) Local Assemblies

5) Delegates can be

- a) Single casted b) Multi casted  
c) Only Multi casted d) Both a and b

6) \_\_\_\_\_ is specially designed for working with the SQL server database.

- a) LINQ to Dataset b) LINQ to object  
c) LINQ to XML d) LINQ to SQL

7) \_\_\_\_\_ event is occurred when user changes textbox data.

- a) Text Leave b) Change c) TextChanged d) Text Click



- 8) Crystal Reports are divided into \_\_\_\_\_ parts.  
a) 1                      b) 2                      c) 3                      d) 5
- 9) Dataset is a collection of  
a) Forms                                      b) Controls  
c) Tables                                      d) Data Sources
- 10) Form contains \_\_\_\_\_ property to make it transparent.  
a) Text                                      b) Opaque  
c) Capacity                                      d) Visible
- 11) \_\_\_\_\_ is the .Net term for a deployment and configuration unit.  
a) Compiler                                      b) Debugger  
c) JIT                                      d) Assembly
- 12) Progress bar can be incremented using \_\_\_\_\_ property.  
a) Min                                      b) Max  
c) Value                                      d) Increment
- 13) Custom control is designed by adding \_\_\_\_\_ item to form.  
a) User Control                                      b) Control Library  
c) Custom Control                                      d) None
- 14) LINQ means  
a) Language Integrated Query  
b) Language Inserted Query  
c) Language Integrated Normalized Query  
d) Language Inserted Normalized Query

2. Answer the following (**any 7**) :

14

- 1) Differentiate between SDI and MDI.
- 2) Give the list of Timer events.
- 3) What is event ? Write its syntax.

Set P





- 4) What is the use of Anchor Property ?
  - 5) List the steps to execute LINQ query.
  - 6) Define GAC.
  - 7) State steps to add User Control to toolbox.
  - 8) Write the method to load a particular Form as a starting Form.
  - 9) Differentiate between Combo box and list box.
3. A) Answer the following (**Any 2**) : **10**
- 1) Explain different properties of PictureBox Control.
  - 2) What is Strong name ? Give the characteristics of it.
  - 3) Write a program to display the text from radio button on label control.
- B) Write a note on advantages of crystal report. **4**
4. Answer the following (**Any 2**) : **14**
- 1) Write a program to implement multicast delegate.
  - 2) What is Assembly Manifest ? Explain in detail.
  - 3) Write the use of following controls :
    - 1) Tool Tip
    - 2) Error Provider
    - 3) Progress Bar
    - 4) Help Provider
5. Answer the following (**Any 2**) : **14**
- 1) Write the steps to create parameterized crystal report also write a code to display it on the form.
  - 2) Explain steps to create and deploy an application.
  - 3) Explain concept of LINQ to SQL.
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**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017**  
**Paper – I : DATA COMMUNICATION AND NETWORKING – II**  
**Computer Science**

Day and Date : Tuesday, 31-10-2017  
Time : 2.30 p.m. to 4.30 p.m.

Total Marks : 50

***N.B. : 1) All questions are compulsory.***  
***2) Figures to the right indicate full marks.***

1. Choose the **correct** alternatives. **10**

- 1) Basic unit of a Bluetooth system is a
  - a) Scatternet
  - b) Nanonet
  - c) Piconet
  - d) None of the above
- 2) SSL provides
  - a) Message Integrity
  - b) Confidentiality
  - c) Compression
  - d) All of these
- 3) \_\_\_\_\_ is responsible for authentication, registration of mobiles.
  - a) SGSN
  - b) GGSN
  - c) BSC
  - d) MSC
- 4) Which of the following protocols uses both TCP and UDP ?
  - a) FTP
  - b) SMTP
  - c) TELNET
  - d) DNS
- 5) \_\_\_\_\_ reorder symbols in a block of symbols.
  - a) Substitution Cipher
  - b) Transposition Cipher
  - c) Caesar Cipher
  - d) None of the above

P.T.O.



- 6) \_\_\_\_\_ is an application layer of TCP/IP.
- a) File Transfer
  - b) N/W virtual terminal
  - c) Mail Service
  - d) All
- 7) \_\_\_\_\_ divides the network into smaller segments in order to reduce traffic.
- a) Bridges
  - b) Switches
  - c) Hubs
  - d) Repeaters
- 8) Default permissions of a file can be changed with
- a) group
  - b) chperm
  - c) chmod
  - d) none
- 9) GPRS is an extension to GSM that operates
- a) Circuit Switched
  - b) Packet Switched
  - c) Both A and B
  - d) None
- 10) Smart Card is
- a) Special Purpose Cards
  - b) Microprocessor Cards
  - c) Processing Unit Contains Memory for Storing data
  - d) Processing unit for software handling

2. Answer the following (**any 5**):

**10**

- 1) What is use of passive hubs ?
- 2) Explain use of Proxy Server.
- 3) What is use of SMTP ?
- 4) Explain applications of Bluetooth.
- 5) What is meant by cipher text ?
- 6) What is meant by flow control ?



3. A) Answer **any two** of the following : **6**
- 1) Explain roles of network administrator.
  - 2) Explain smart card in detail.
  - 3) Explain firewall.
- B) Explain groupadd & groupdel commands. **4**
4. Answer **any two** of the following : **10**
- 1) Explain elements of transport layer protocol.
  - 2) Explain GPRS.
  - 3) Explain IP security in detail.
5. Answer **any two** of the following : **10**
- 1) Explain samba server.
  - 2) Write note on biometrics.
  - 3) Write note on E-mail security.
-



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**B.Sc. (ECS) (Part – III) (Semester – VI) (Old) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – II : Database Management System – II**

Day and Date : Wednesday, 1-11-2017  
Time : 2.30 p.m. to 4.30 p.m.

Total Marks : 50

**Instructions. :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose the **correct** alternatives. **10**

- 1) In the PL/SQL, the package specification contains \_\_\_\_\_ declarations.
  - a) Public
  - b) Private
  - c) Friend
  - d) Protected
- 2) \_\_\_\_\_ is used to define code that is executed/fired when certain actions or event occur.
  - a) Cursor
  - b) Trigger
  - c) Keywords
  - d) Replace
- 3) Which of the following is not a recovery technique ?
  - a) Deferred update
  - b) Immediate update
  - c) Two-phase commit
  - d) Recovery management
- 4) Checkpoints are a part of
  - a) Recovery measures
  - b) Security measures
  - c) Concurrency measures
  - d) Authorization measures
- 5) \_\_\_\_\_ helps to solve concurrency problem.
  - a) Locking
  - b) Transaction Machine
  - c) Transaction Serializability
  - d) Two Phase Commit

P.T.O.



- 6) In a two phase locking protocol, transaction release locks in
- a) Shrinking
  - b) Growing
  - c) Running
  - d) Initial
- 7) Transaction \_\_\_\_\_ ensures that the transaction is being executed successfully.
- a) Concurrent
  - b) Consistency
  - c) Serializability
  - d) Durability
- 8) \_\_\_\_\_ is an essential part of backup system.
- a) Filter
  - b) Recovery
  - c) Security
  - d) Scalability
- 9) In log based recovery, the log is sequence of \_\_\_\_\_
- a) Filters
  - b) Records
  - c) Block
  - d) Number
- 10) The simplest approach to introducing redundancy is to duplicate every disk is
- a) Mirroring
  - b) Imaging
  - c) Copying
  - d) All of these

2. Attempt **any five** :

10

- 1) Give the syntax and example of % TYPE.
- 2) Give the syntax of for and while loop.
- 3) Write syntax to delete procedure and function.
- 4) List out advantages of PL/SQL.
- 5) Define Serial Schedule and Concurrent Schedule.
- 6) Write difference between deferred update and immediate update.

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3. A) Attempt **any two** : **6**
- 1) What is Trigger ? Explain with Syntax.
  - 2) Explain variation in 2PL.
  - 3) Explain failure classification.
- B) Write a PL/SQL block to calculate factorial of number. **4**
4. Attempt **any two** : **10**
- 1) What is procedure and function ? Explain with Syntax.
  - 2) What is transaction ? Explain ACID properties.
  - 3) What is exception handling ? Explain predefined and user defined Exception.
5. Attempt **any two** : **10**
- 1) Write a PL/SQL block to implement concept of cursor using for loop.
  - 2) Write a PL/SQL block using function to pass two strings and print which is greater.
  - 3) Write a PL/SQL block to update salary of employee by adding 10% bonus if salary is less than 5000.
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**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017  
Paper – III : ADVANCED JAVA**

Day and Date : Thursday, 2-11-2017  
Time : 2.30 p.m. to 4.30 p.m.

Max. Marks : 50

***N.B. :*** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. A) Choose correct alternative : 5

- 1) Which method is used for loading a Database driver in JDBC ?
  - a) registerDriver
  - b) class.forName
  - c) both a) and b)
  - d) getConnection
- 2) \_\_\_\_\_ is a default layout manager in the Applet.
  - a) BorderLayout
  - b) FlowLayout
  - c) GridLayout
  - d) GridBagLayout
- 3) Which method is used to initialize applet ?
  - a) start()
  - b) init()
  - c) run()
  - d) all of these
- 4) Which method is invoked by the servlet container immediately after a servlet object is created ?
  - a) init()
  - b) service()
  - c) run()
  - d) start()
- 5) Which JSTL tag library provides the support for internationalization.
  - a) core
  - b) formatting
  - c) xml
  - d) all of these

B) **True or false :** 5

- 1) An expression tag is providing JSP page information to JSP Engine.
- 2) CGI stands for Connection Gateway Interface.
- 3) The Type-4 driver serves as a pure Java driver and are auto downloadable.
- 4) An event is an object that describes a state change in a source or object.
- 5) The default value of page directive attribute is Error page.





2. Answer **any five** of the following : **10**
- 1) What is listener ?
  - 2) What are the advantages of servlet over CGI ?
  - 3) Define structure of Deployment descriptor.
  - 4) What is the use of implicit object 'page' in JSP ?
  - 5) List out methods of Applet life cycle.
  - 6) What is session ?
3. A) Answer **any two** of the following : **6**
- 1) What is filter ? Explain use of filter in web application.
  - 2) Explain the advantages and disadvantages of cookies.
  - 3) Write a program to display current date and time in applet.
- B) Explain Type-4 driver with suitable example. **4**
4. Answer **any two** of the following : **10**
- 1) Write a program to demonstrate use of any two JSP implicit objects.
  - 2) Explain servlet life cycle in detail.
  - 3) Write a program to demonstrate use of RequestDispatcher object in servlet.
5. Answer **any two** of the following : **10**
- 1) Write a program to demonstrate use of CallableStatement.
  - 2) Explain JDBC architecture.
  - 3) Explain Event delegation model.
-



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**B.Sc. (ECS) – III (Semester – VI) (Old) Examination, 2017  
COMPILER CONSTRUCTION (Paper– IV)**

Day and Date :Friday, 3-11-2017  
Time : 2.30 p.m. to 4.30 p.m.

Max. Marks : 50

**Instructions :** 1) *All questions are compulsory.*  
2) *All questions carry equal marks.*

1. Choose correct alternatives.

10

- 1) The \_\_\_\_\_ determines the structure of the source string by grouping the tokens together.
  - a) Lexical Analyzer
  - b) Syntax Analyzer
  - c) Semantic Analyzer
  - d) None of these
- 2) The \_\_\_\_\_ is a sequence of consecutive statements in which flow of control enters at the beginning and leaves at the end without halt or possibility of branching.
  - a) basic blocks
  - b) flow graphs
  - c) directed acyclic graph
  - d) all of the above
- 3) The attributes that can be computed from the values of the attributes at the children's of that node in the parse tree is called as \_\_\_\_\_.
  - a) inherited
  - b) synthesized
  - c) both a and b
  - d) none of these
- 4) \_\_\_\_\_ is the activity of filling up unspecified information of labels using appropriate semantic actions in during code generation process.
  - a) Backtracking
  - b) Triplets
  - c) Intermediate code
  - d) Backpatching
- 5) The \_\_\_\_\_ is a new block created such that successor of this block is the header block.
  - a) inner loops
  - b) reducible
  - c) pre-header
  - d) dominators



- 6) In case of \_\_\_\_\_ the size of data objects is known at compile time.
- a) stack allocation                      b) heap allocation  
c) static allocation                      d) both b and c
- 7) The \_\_\_\_\_ parser uses reduction process.
- a) Topdown Parser                      b) Bottom up Parser  
c) Either a or b                      d) Both a and b
- 8) \_\_\_\_\_ parsers begin at the start symbol and try to apply productions to arrive at the target string.
- a) L L parser                      b) LR parser  
c) none of these                      d) all of above
- 9) \_\_\_\_\_ is a compiler which performs the recompilation of only modified source rather than compiling the whole source program.
- a) Cross compiler                      b) Boot strapping compiler  
c) One pass compiler                      d) Incremental compiler
- 10) \_\_\_\_\_ is a translation scheme in which the type of each expression is obtained from the types of subexpressions.
- a) Type checking                      b) Type analysis  
c) Both a and b                      d) None of these

2. Solve **any five** :

10

- 1) Give the name of phases of compiler.
- 2) Explain left factoring with example.
- 3) Role of semantic analysis.
- 4) Give the types of errors handled by syntax analyzer.
- 5) Construct the DAG for the following blocks.

$a := b * c, d := b, e := b*c, b := e, f := a + c, g := f + d$

6) Define :

- a) dominators
- b) natural loops.



3. A) Solve **any two** from following questions : 6

1) For the following grammar construct Syntax Directed Definition (SDD).

$S \rightarrow EN$

$E \rightarrow E + T \mid E - T \mid T$

$T \rightarrow T * F \mid T / F \mid F$

$F \rightarrow (E) \mid \text{digit}$

$N \rightarrow ;$

2) What is runtime storage ? Explain the runtime storage allocation in detail.

3) Explain compiler construction tools.

B) Write the Intermediate Representation like syntax tree and three address code for the following expression. 4

$(a-b)*(c+d)-(a+b)$

4. Solve following questions : 10

1) Check whether following grammar is LR(1) grammar or not.

$S \rightarrow AaAb \mid BbBa, A \rightarrow \epsilon \mid B \rightarrow \epsilon$

2) Why symbol table is used ? Explain symbol table with its operation.

3) What is three address code ? Explain implementation of three address code statements.

5. Solve following questions : 10

1) Construct LL(1) parse table for following grammar :

$S \rightarrow aBDh \quad B \rightarrow cC \quad C \rightarrow bC \mid \epsilon \quad D \rightarrow EF \quad E \rightarrow g \mid \epsilon \quad F \rightarrow f \mid \epsilon$

2) Define Code optimization. Explain principle sources of code optimization.

3) Explain Activation Record. Draw the Activation Record for the factorial program.

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**B.Sc. (Entire Computer Science) – III (Semester – VI) (Old)**  
**Examination, 2017**  
**WEB TECHNOLOGY AND E-COMMERCE – II**  
**(Paper – V)**

Day and Date : Monday, 6-11-2017  
Time : 2.30 p.m. to 4.30 p.m.

Max. Marks : 50

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right indicate full marks.**

1. Choose correct alternative :

10

- 1) \_\_\_\_\_ is used to convert plane text to cipher text.
  - a) Encryption
  - b) Decryption
  - c) Convertor
  - d) Changer
- 2) \_\_\_\_\_ is the online payment mode.
  - a) E-wallet
  - b) Credit card
  - c) E-cash
  - d) All of the above
- 3) \_\_\_\_\_ helps to display common content in multiple pages.
  - a) Default page
  - b) Master page
  - c) Content page
  - d) Common page
- 4) \_\_\_\_\_ is the method Command Object.
  - a) ExecuteMethod ()
  - b) ExecuteFunction ()
  - c) ExecuteReader ()
  - d) Execute ()
- 5) Session stores every client data separately.
  - a) True
  - b) False
- 6) EDI is most commonly applied in the \_\_\_\_\_ phase of the trade cycle.
  - a) Search
  - b) Search and Negotiate
  - c) Payment
  - d) Execution and Settlement
- 7) \_\_\_\_\_ is an inter-organization, computer to computer communication of standard message.
  - a) E-Market
  - b) E-Commerce
  - c) EDI
  - d) None of the above

P.T.O.



- 8) Paperless work is the drawback of EDI.  
a) True                      b) False
- 9) \_\_\_\_\_ controls provide a link for unauthenticated users to log on.  
a) Login                              b) LoginStatus  
c) LoginName                      d) LoginView
- 10) \_\_\_\_\_ ado.net class provide disconnected environment.  
a) Dataset                              b) DataReader  
c) Connection                      d) Command

2. Attempt **any five** : **10**

- 1) List Event of master page.
- 2) Explain data adapter with syntax.
- 3) Explain advantage and disadvantages of e-market.
- 4) Define <Allow> and <deny> with example.
- 5) Explain any four HTTP status code.
- 6) Explain view state with example.

3. A) Attempt **any two** : **6**

- 1) Explain E-Bookshop with supply chain.
- 2) Explain Delivery mode of goods.
- 3) Explain features of ADO.Net.

B) Write asp.net code to update, delete employee information from “emp” table. **4**

4. Attempt **any two** : **10**

- 1) Explain Master Page and Content Page. Write a code to override property of Textbox (master page) from content page.
- 2) Explain E-visibility in detail.
- 3) Define authentication. Explain types of authentication.

5. Attempt **any two** : **10**

- 1) Explain Session Object. Explain modes of session.
- 2) Define inter-organizational transaction. Explain credit transaction trade cycle.
- 3) Explain online payment option in detail.



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**B.Sc. (ECS) – III (Semester – VI) Examination, 2017**  
**COMPUTER SCIENCE**  
**Paper – VI : Visual Programming and Application Software – II (Old)**

Day and Date : Tuesday, 7-11-2017

Max. Marks : 50

Time : 2.30 p.m. to 4.30 p.m.

**Instructions :** 1) **All questions are compulsory.**  
2) **Figures to the right place indicate full marks.**

1. Choose correct alternative. 10
- 1) The Data source in a LINQ query can be a  
a) Data Structure    b) File System    c) Database    d) All of these
  - 2) The delegate is a \_\_\_\_\_ type.  
a) Value    b) Reference    c) Pointer    d) None of these
  - 3) Mouse events generated by supplying the input through the mouse.  
a) True    b) False
  - 4) You can return the values using event.  
a) True    b) False
  - 5) A \_\_\_\_\_ is used a single .Net application.  
a) Private assembly    b) Shared assembly  
c) Global assembly    d) All of these
  - 6) In LINQ \_\_\_\_\_ is used to filter the data returned by a query.  
a) where clause    b) group clause  
c) select clause    d) orderby clause
  - 7) The \_\_\_\_\_ control is used to display data in a drop-down list.  
a) ListBox    b) GroupBox    c) ComboBox    d) CheckBox
  - 8) Which of the following is a common control event ?  
a) SingleClick    b) DoubleClick    c) MouseMove    d) MouseDown

P.T.O.



- 9) The assemblies can contain several namespaces.  
a) True                      b) False
- 10) The application of delegate is \_\_\_\_\_  
a) Event handling                      b) Multithreading  
c) Both a and b                      d) None of these
2. Answer the following (**any five**). **10**
- 1) List the main properties of TextBox.
  - 2) Give the advantages of Windows applications.
  - 3) What are the types of LINQ ?
  - 4) What is difference between a Label and TextBox control ?
  - 5) What is SDI ?
  - 6) Give the use of ListBox control.
  - 7) Give the meaning of delegate.
3. A) Answer **any two** of the following. **6**
- 1) Give the different features of assemblies.
  - 2) Write the basic steps to execute a LINQ query.
  - 3) How to present data from Crystal Reports on to form ?
- B) Write a note on LINQ filter operator. **4**
4. Answer **any two** of the following. **10**
- 1) Explain delegate with its applications
  - 2) Explain the term.
    - a) RadioButton
    - b) TextBox
    - c) Button
  - 3) What is Assembly Manifest ? Explain in detail.
5. Answer **any two** of the following. **10**
- 1) Explain different mouse events.
  - 2) What is shared assemblies ? Explain the procedure to create the shared assembly.
  - 3) What is Crystal reports ? Explain in detail.





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**B.Sc. I (ECS) (Semester – I) Examination, 2017  
(New CBCS)  
ENGLISH COMPULSORY  
Text : Golden Petals**

Day and Date : Tuesday, 31-10-2017  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

**N.B. :** 1) **All questions are compulsory.**  
2) **Figures indicate to right carry full marks.**

1. Rewrite the following sentences choosing the correct alternative : 14

- 1) \_\_\_\_\_ gave a notice of leaving the keystone company as he was not interested in doing films with the company.  
a) Ford staring      b) Ford starling      c) Ford sterling      d) Eward Ford
- 2) Charlie was signed at \_\_\_\_\_ pounds per week by the company.  
a) 160                      b) 170                      c) 150                      d) 175
- 3) Shanti Tigga was recruited in the year \_\_\_\_\_ on grounds of compassion after the death of her husband.  
a) 2004                      b) 2005                      c) 2003                      d) 2004
- 4) Nachiketa waited at the gates of god of death Yama without any food or water for \_\_\_\_\_ days.  
a) five                      b) two                      c) four                      d) three
- 5) The poem-success is Counted Sweetest was first published in the year  
a) 1874                      b) 1864                      c) 1894                      d) 1834
- 6) I find no \_\_\_\_\_ and all my war is done.  
a) piece                      b) room                      c) peace                      d) place
- 7) The god of death granted \_\_\_\_\_ boons to Nachiketa after becoming impressed by him.  
a) two                      b) five                      c) three                      d) six
- 8) Choose the correct form of noun.  
What is the \_\_\_\_\_ ?  
a) news                      b) nues                      c) neus                      d) newz

P.T.O.



9) Choose the correct article.

Look there is \_\_\_\_\_ apple in the bag of Sarika.

- a) the                      b) a                      c) an                      d) no article

10) Choose the correct collective noun.

There was a meeting of the \_\_\_\_\_ of Directors.

- a) Bored                      b) Board  
c) Boared                      d) None of the above

11) Choose the correct form of the verb.

Samir \_\_\_\_\_ stories on every sunday.

- a) reading                      b) reds                      c) reads                      d) reeds

12) Choose the correct form of the pronoun.

Nobody but \_\_\_\_\_ was present in the class whole day listening the lectures.

- a) he                      b) him                      c) his                      d) one

13) Choose the correct mood.

When the sun set we returned home.

- a) Imperative Mood                      b) Subjunctive Mood  
c) Happy Mood                      d) Indicative Mood

14) Choose the correct homophone.

This is very costly \_\_\_\_\_ that – I purchased in London last month.

- a) sent                      b) scent                      c) cent                      d) ksent

2. Answer the following questions in **2-3** sentences (**any seven**).

**14**

- 1) What was the review of Charlie Chaplin's first film by a New York writer ?
- 2) Describe the costume of Charlie Chaplin in the Film-Making a Living.
- 3) Describe the achievements of Shanti Tigga in her training.
- 4) What was the reaction of adivasi groups after the death of Shanti Tigga ?
- 5) Describe the condition of the film makers of Charlie Chaplin's first film.
- 6) Describe Vajasrawas love for Nachiketa.
- 7) What was Nachiketa's second wish ?
- 8) Why was Yama pleased with Nachiketa ?



3. A) Answer in about **50** words **each (any two)**. **8**
- 1) What is communication and why do we communicate ?
  - 2) How do you communicate with a principal to know about the admission process in his college ?
  - 3) Write in detail what is communication barriers ?
- B) Answer the following questions (**any two**). **6**
- 1) Why does the poet not find any peace in the poem 'I Find No Peace' ?
  - 2) What is the theme of the poem 'Success is Counted Sweetest' ?
  - 3) What are the conflicting emotions of the poet in the poem – 'I Find No Peace' ?
4. Answer **any one** of the following. **14**
- 1) Describe what is communication process stating importance of its parts and stages.
  - 2) Why the Language skill and vocabulary are necessary for effective communicating our thoughts to other ? Explain in detail.
5. Answer the following question. **14**
- What are the advantages of two way communication ? Write in detail.
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