



SLR-SC – 1

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**B.Sc. I (ECS) (Semester – I) (CBCS Pattern) Examination, 2018**  
**ENGLISH (Comp.) (Old)**  
**On Track – English Skills for Success**

Day and Date : Wednesday, 28-3-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. Rewrite the following sentences by choosing the correct alternative : 14
- 1) What did the policeman on the beat constantly do ?
    - a) twirl his stick
    - b) interrogate people on his beat
    - c) smoke a cigar
    - d) unlock doors
  - 2) Jimmy Wells and Bob were raised in \_\_\_\_\_
    - a) New York
    - b) Chicago
    - c) City
    - d) Restaurant
  - 3) The writer and Miss Krishna \_\_\_\_\_
    - a) were at school together
    - b) met at an exhibition
    - c) met at a tea party
    - d) were neighbours
  - 4) In the end the narrator refused to accept all of Miss Krishna's possession except \_\_\_\_\_
    - a) a cigarette lighter
    - b) a little nine-inch clock
    - c) a tiny glazed coffee cup
    - d) a small Burmese box
  - 5) 'The Myth of Artificial intelligence' is written by \_\_\_\_\_
    - a) Anita Desai
    - b) Attila Narin
    - c) Nargis Dalal
    - d) Dr. Abdul Kalam
  - 6) The word 'intelligence' is derived from the Latin word \_\_\_\_\_
    - a) intellegere
    - b) intellect
    - c) intellectual
    - d) inter
  - 7) The bangle sellers are carrying their loads \_\_\_\_\_
    - a) to a married woman's house
    - b) to the house of a maiden woman
    - c) to a temple fair
    - d) to the streets

P.T.O.



- 8) The phrase ‘like the flame of her marriage’ is the \_\_\_\_\_ used by the poet.  
a) Simile                                        b) Metaphor  
c) Personification                              d) Alliteration
- 9) The Irish Airman was from \_\_\_\_\_  
a) Kiltartan Cross                              b) Dublin  
c) Kross Kitartan                                d) Kitron Cross
- 10) This is Ramu and this is \_\_\_\_\_ dog.  
a) his    b) her    c) its    d) they
- 11) Ram, Seeta and Vijay went Mumbai and \_\_\_\_\_ ate Potato wada.  
a) he    b) she    c) it    d) they
- 12) Doctor is a \_\_\_\_\_ noun.  
a) Proper    b) Common                                        c) Collective                                        d) Countable
- 13) My friend returned home \_\_\_\_\_ 10 P.M.  
a) on    b) in    c) at    d) to
- 14) She can take care of \_\_\_\_\_  
a) oneself                                        b) herself    c) her    d) myself

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

14

- 1) What sort of relationship did Bob and Jimmy share ?
- 2) What is the climax of the story “After Twenty Years” ?
- 3) What do you understand of Miss Krishna’s childhood from the story ?
- 4) What is the meaning of the word connoisseur ?
- 5) What is meant by, ‘artificial intelligence’ ?
- 6) Who is the narrator of poem ‘ The bangle sellers’ ?
- 7) What coloured bangles are suitable for a bride on bridal morn ?
- 8) What does the phrase “this life, this death” refer to ?
- 9) What does the speaker say about those he fights in the poem “An Irish airman foresees his death” ?

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

10

- 1) What makes the Computer Intelligent ?
- 2) How Ms Krishna spent a few days with writer ?
- 3) Describe the scene in the beginning of the story “After Twenty Years” .

B) Describe the theme of the poem “Bangle Sellers”.

4

Set P



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

- 1) Superstitions.
- 2) Define noun and its types with some examples.
- 3) Define pronoun and its types with some examples.

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

- 1) Read the following passage carefully and make a note of it.

Civilised man is by now well aware of the more obvious symptoms of water pollution : scum-covered rivers, stinking bays, and shorelines littered with bloated fish. The cause of much of it is equally clear: the indiscriminate dumping of raw sewage and industrial sludge into the nearest body of water has exceeded the absorptive capacity of the environment. Because the symptoms of this overflow are so compelling, it seems likely that we shall finally attempt to do something about it. But continued population growth makes it impossible that we shall find the funds to do more than skim off the chunks.

Unfortunately, the most serious water-pollution treats are those which cannot be seen, smelt, or picked up by the handful. The organic content in many domestic water supplies which have been treated to some degree is apparently still high enough to protect viruses from the effects of chlorine. Hence tap water is a suspected transmission route for the alarming rise of infectious hepatitis in the United States today. Moreover, the vast array of chemicals which industry spews into the environment in many cases defies filtration. These chemicals now pervade not only rivers, lakes and even oceans, but also vast reservoirs of ground water. As with air pollutants, their possible toxic effects have in most case not even been adequately catalogued. Many, of course, are known to be fatal to fish, which is the mainstay of high quality protein supplies in much of the world.

- 2) Write a paragraph on 'A Meaningful Education'.
- 3) Write an essay on 'Impact of Mobiles on the Lives of the Youth Today'.

Seat  
No.

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Set

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**B.Sc. – I (ECS) (Semester – I) Examination, 2018**  
**ENGLISH (Compulsory) (New) (CBCS)**  
**“Golden Petals”**

Day and Date : Wednesday, 28-03-2018

Max. 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. Rewrite the following sentences by using the correct options.

14

- 1) Mark Sennett and Mabel Normand first saw Charlie Chaplin in *A Night in an \_\_\_\_\_ Music Hall*.  
a) Italian                      b) American                      c) Indian                      d) English
- 2) Before Shanti Tigga getting selected as the first woman jawan, women were selected as officers in \_\_\_\_\_ combat units only.  
a) pro-                      b) re-                      c) non-                      d) post-
- 3) Vajasrawas donated Nachiketa to the God of Death, since he was  
a) very generous                      b) angered by his son  
c) fed up with his son                      d) poor and helpless
- 4) The Indian Army started to recruit female officers in the year  
a) 1992                      b) 1994                      c) 1996                      d) 1991
- 5) The narrator in *I Find No Peace* says that he flew above the wind, yet he couldn't  
a) succeed                      b) die                      c) arise                      d) fall
- 6) According to Emily Dickinson the people who win are not able to define  
a) loss                      b) victory                      c) life                      d) death
- 7) “Likewise displeaseth me both life and death,  
And my \_\_\_\_\_ is causer of this strife.”  
a) father                      b) enemy                      c) delight                      d) sorrow



8) The cattle in the photograph \_\_\_\_\_ to my friend.

- a) is belonging                      b) belong  
c) belongs                              d) belonging

9) The noun *friend* carries \_\_\_\_\_ gender.

- a) masculine      b) neuter              c) common          d) feminine

10) She saw *herself* in the mirror.

The word *herself* in the above sentence is \_\_\_\_\_ pronoun.

- a) a personal                              b) an emphatic  
c) a reciprocal                              d) a reflexive

11) He is such \_\_\_\_\_ unique person that everyone likes him.

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

12) If I were a bird, I would fly.

The above sentence has \_\_\_\_\_ mood.

- a) Imperative                              b) Subjunctive  
c) Indicative                              d) Interrogative

13) I *did* a project.

The word *did* in the above sentence is a

- a) helping verb      b) modal              c) main verb          d) semi-modal

14) Have you seen \_\_\_\_\_ Mount Everest ?

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

2. Answer the following bits in **two to three** sentences **each**. (Any Seven) 14

- 1) Why did Charlie Chaplin feel that he should return to the stage ?
- 2) How did Shanti Tigga join the Indian Army ?
- 3) Why was Nachiketa disappointed by his father, Vajasrawas ?
- 4) How did the New York writer review Chaplin's first movie *Making a Living* ?
- 5) What qualities of Shanti Tigga motivated the Indian President to honour her ?
- 6) Why did Yama give three boons to Nachiketa ?
- 7) What acting qualities of Charlie Chaplin impressed the audiences ?
- 8) What does the unexpected death of Shanti Tigga mean ?



3. A) Answer the following questions in about **50** words **each**. (**Any two**) **8**
- 1) What do you mean by communication ?
  - 2) How do you describe the *what*, *why* and *how* of communication ?
  - 3) How will you communicate to you younger brother the recipe of making tea ?
- B) Write short notes on the following. (**Any two**) **6**
- 1) What is the central theme of the poem *I Find No Peace* ?
  - 2) Why does Emily Dickinson say the purple Host can't tell the definition of victory ?
  - 3) Why did the poet in *I Find No Peace* experience contradictory feelings ?
4. Answer the following elaborately. (**Any one**) **14**
- 1) Bring out in detail the communication process by illuminating its stages.
  - 2) Describe the importance of *Mind, Medium and Message* in effective communication.
5. Interpret the Seven Cs-Completeness, Clarity, Correctness, Conciseness, Consideration, Courtesy and Concreteness in a successful communication. **14**
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Seat  
No.

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Set

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**B.Sc. (ECS) – I (Semester – I) Examination, 2018**  
**FUNDAMENTAL OF COMPUTER (Paper – II)**  
**(CBCS)**

Day and Date : Saturday, 31-3-2018

Max. Marks : 70

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

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

1. A) Choose the correct alternatives :

7

- 1) Linux is system software
  - a) True
  - b) False
- 2) \_\_\_\_\_ is a not output device.
  - a) Keyboard
  - b) Printer
  - c) Speaker
  - d) Terminals
- 3) When an operating system runs two programs at the same time is known as
  - a) Multiuser
  - b) Multitasking
  - c) Multithreading
  - d) Multiprocessing
- 4) To open a text file \_\_\_\_\_ short cut key is used.
  - a) Ctrl+ C
  - b) Ctrl+ O
  - c) Ctrl+ V
  - d) Ctrl+ S
- 5) \_\_\_\_\_ is the non volatile memory of computer.
  - a) ROM
  - b) RAM
  - c) Both a) and b)
  - d) None of these
- 6) \_\_\_\_\_ short cut key used to refresh the browser window.
  - a) F7
  - b) F8
  - c) F5
  - d) F1
- 7) The first generation computers were manufactured using instead of
  - a) Vacuum Tubes, Transistors
  - b) Transistors, IC
  - c) Transistors, Vacuum Tube
  - d) None of these

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- B) **True/False** : 4
- 1) Symbian is the example of mobile operating system.
  - 2) OCR is output device.
  - 3) Extension of Excel file is .mdb.
  - 4) RAM is a primary memory.
- C) Fill in the blanks : 3
- 1) SSI stands for \_\_\_\_\_
  - 2) VLSI stands for \_\_\_\_\_
  - 3) FAT stands for \_\_\_\_\_
2. Attempt **any seven** of the following : 14
- 1) What is word processor ?
  - 2) What is software ? List the types of software.
  - 3) What is operating system ?
  - 4) What is Multiprogramming ?
  - 5) What is Input and Output device ?
  - 6) How many types of charts are available in Excel ?
  - 7) What is file ?
  - 8) What is Mobile Operating System ?
  - 9) What is Spreadsheet ?
3. A) Attempt **any two** of the following : 10
- a) What is Printer ? Explain types of printers.
  - b) Define Linux. Explain features of Linux.
  - c) What is Operating System ? Explain types of operating system.
- B) Write steps of creating a new Power Point presentation. 4
4. Attempt **any two** of the following : 14
- a) Define computer memory. Explain types of memory.
  - b) What is output device ? Explain types of keyboard and monitors.
  - c) What is computer ? Explain basic structure of computer system.
5. Attempt **any two** of the following : 14
- a) What is MS-Excel ? Explain any five function of Excel.
  - b) Explain different types of computers and list various uses of computers.
  - c) What is motherboard ? Explain different parts with suitable diagrams.





Seat No.	
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**B.Sc. (ECS) – I (Semester – I) Examination, 2018  
PROGRAMMING USING C (Paper – III) (CBCS)**

Day and Date : Monday, 2-4-2018  
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.**  
3) **Each question carries equal marks.**

1. Choose correct alternatives :

14

- 1) Which of the following are correct variable name ?  
a) xyz                      b) 123                      c) 1abc                      d) ab&c
- 2) main() function is a user defined function.  
a) True                      b) False
- 3) int is return type as well as data type.  
a) True                      b) False
- 4) \_\_\_\_\_ are only in lower case letters.  
a) Keywords                b) Identifiers              c) Variables                d) Constants
- 5) \_\_\_\_\_ is used to declare symbolic constant in program.  
a) #define                      b) const  
c) both a) and b)              d) none of these
- 6) The position of the first element of array is \_\_\_\_\_  
a) 0                              b) 1  
c) 2                              d) size of the array – 1
- 7) C is developed by \_\_\_\_\_  
a) Dennis Ritchie    b) Ken Thomson    c) Bill Gates              d) None of these
- 8) The \_\_\_\_\_ function is used to clear the screen.  
a) scanf()                      b) clrscr()                c) getchar()                d) getch()
- 9) \_\_\_\_\_ format code is used for integer type value.  
a) %d                              b) %1d                      c) %db1                      d) none
- 10) \_\_\_\_\_ is the post conditioned loop.  
a) For                              b) While                      c) Do while                d) All of above
- 11) C language contains \_\_\_\_\_ keywords.  
a) 23                              b) 32                              c) 36                              d) 63
- 12) \_\_\_\_\_ is used to new line operator.  
a) \t                              b) \s                              c) \x                              d) \n



- 13) \_\_\_\_\_ function are used to compare between two strings.  
 a) comp()                      b) str()                      c) strcmp()                      d) none of these
- 14) Which is the special symbol allowed to declare the variable name ?  
 a) \*(asterisk)                      b) #(hash)  
 c) \_(underscore)                      d) none of these

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

- 1) Define Program.
- 2) Write the syntax of switch case statement.
- 3) State the syntax printf() function.
- 4) State the syntax of nested if else statement.
- 5) Define variable and constant.
- 6) State the rules of declaring variable name.
- 7) Write the advantage of flowchart.
- 8) Draw any four symbols to used flowchart.
- 9) State any four Data Types in C language.

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

- 1) Define Algorithm. Write an algorithm to calculate simple interest.
- 2) Explain Break, goto, continue statement with example.
- 3) Explain any two types of array.

B) Write a program in c to test given number is prime or not. **4**

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

- 1) Explain the history of C language.
- 2) Write a program in c to print the following pattern :

```

1   2   3   4   5
1   2   3   4
1   2   3
1   2
1

```

3) Define string. Explain any two string functions used in C language.

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

- 1) Explain the features of C language.
- 2) Write a program in c to calculate addition two matrix (2 × 2).
- 3) Explain for loop with example.



Seat No.	
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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018**  
**ELECTRONICS**  
**Linear Electronics – I (Paper – IV)**

Day and Date : Tuesday, 3-4-2018  
 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. Multiple choice questions. 14

- 1) \_\_\_\_\_ is one of the following passive component.
 

a) FET	b) Transistor
c) Diode	d) Resistor
- 2) In case of linear resistor current and applied voltage are related as
 

a) directly proportional	b) not directly proportional
c) inversely proportional	d) none
- 3) In case of electrolytic capacitor for its polarity long lead is
 

a) negative	b) positive	c) neutral	d) none
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- 4) Transformer transfers energy from primary to secondary as
 

a) ac to ac	b) dc to ac	c) dc to dc	d) None of the above
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- 5) Forbidden energy gap for si is
 

a) 0.72 ev	b) 1.12	c) 1.6 ev	d) none
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- 6) In an intrinsic semiconductor, the no. of free electrons is \_\_\_\_\_ the no. of holes.
 

a) equal to	b) less than	c) more than	d) none
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- 7) Semiconductors have \_\_\_\_\_ temperature coefficient of resistance.
 

a) positive	b) negative	c) zero	d) none
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- 8) Emitter base junction of transistor is always
 

a) forward biased	b) reverse biased
c) zero biased	d) none
- 9) Current amplification factor  $\beta$  is the ratio of
 

a) $\Delta I_C / \Delta I_E$	b) $\Delta I_C / \Delta I_B$	c) $\Delta I_E / \Delta I_B$	d) none
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- 10) The base region of transistor is always thin &
- a) heavily doped
  - b) lightly doped
  - c) metallic
  - d) none of these
- 11) \_\_\_\_\_ coupling is useful for impedance matching.
- a) RC
  - b) DC
  - c) transformer
  - d) none
- 12) Output impedance of ideal Op-amp is
- a) infinite
  - b) zero
  - c)  $75\Omega$
  - d)  $100\Omega$
- 13) In non inverting Op-amp the output is \_\_\_\_\_ phase with input signal.
- a)  $90^\circ$  out of
  - b) in
  - c)  $180^\circ$  out of
  - d) none
- 14) CMRR of ideal Op-amp is
- a)  $\infty$
  - b) zero
  - c) low
  - d) high

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

14

- 1) State KCL & KVL with one example.
- 2) Draw symbol of PNP & NPN transistor.
- 3) What is DC load line ? What is Q Point ?
- 4) Draw block diagram of Op-amp.
- 5) A disc capacitor has 104 number on its body then its values ?
- 6) What is use of UPS ?
- 7) Give four parameters of Op-amp.
- 8) A resistor has colour sequence are yellow, violet, black and silver then its value is ?
- 9) Draw symbol of iron core and ferrite core inductor.

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

10

- 1) Explain zener diode as voltage regulator.
- 2) Explain step up and step down transformer.
- 3) Explain construction of P-N junction diode.

B) Explain Light Emitting Diode (LED).

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4. Attempt **any two** of the following. **14**
- 1) What is resistor ? Explain any three types of resistor and capacitor.
  - 2) Explain N-type of semiconductor and intrinsic semiconductor.
  - 3) What is rectifier ? Explain half wave rectifier and full wave rectifier.
5. Attempt **any two** of the following. **14**
- 1) What is biasing ? Explain PNP transistor.
  - 2) What is amplifier ? Explain transformer coupled amplifier with its advantages and disadvantages.
  - 3) What is operational amplifier ? Explain op-amp as inverting amplifier.
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Seat No.	
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Set	P
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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018**  
**DIGITAL ELECTRONICS – I (Paper – V)**

Day and Date : Wednesday, 4-4-2018  
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.**

1. Multiple choice questions :

14

- 1) A half adder makes \_\_\_\_\_ bit of addition.  
a) 1                      b) 2                      c) 3                      d) 4
- 2) Acronym of ASCII is  
a) American Standard Code for Information Integer  
b) American Standard Code for Information Interchange  
c) American Standard Code for Informal Interchange  
d) American Standard Code for Informal Interconversion
- 3) Flip-flop stores \_\_\_\_\_ bit information.  
a) 0                      b) 1                      c) 3                      d) 4
- 4) Shift counter is also known as  
a) Ring counter                      b) MOD counter  
c) Johnson counter                      d) Up counter
- 5) Demultiplexer means  
a) One to many    b) Many to one    c) One to one    d) Many to many
- 6) \_\_\_\_\_ is unweighted code.  
a) BCD                      b) excess-3                      c) binary                      d) hexadecimal
- 7) In hexadecimal number system \_\_\_\_\_ numbers are used.  
a) 6                      b) 10                      c) 16                      d) 20
- 8) The excess-3 code of 7 is  
a) 1011                      b) 1001                      c) 1100                      d) 1010
- 9) \_\_\_\_\_ is called as inverter.  
a) NOT                      b) NAND                      c) NOR                      d) EX-OR
- 10) \_\_\_\_\_ gate whose output is 1 only when both inputs are 1.  
a) OR                      b) NAND                      c) AND                      d) EX-OR
- 11) In 32 to 1 multiplexer \_\_\_\_\_ control lines are used.  
a) 2                      b) 3                      c) 4                      d) 5
- 12) A \_\_\_\_\_ flip-flop can be used to divide the input clock frequency by 2.  
a) T                      b) D                      c) RS                      d) JK



- 13) In IC 7490 \_\_\_\_\_ flip-flops are used.  
a) 2                                  b) 3                                  c) 4                                  d) 5
- 14) A IC 74138 is \_\_\_\_\_ decoder.  
a) Octal to binary                                  b) 3 to 8  
c) Hex to binary                                  d) Decimal to binary

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

- 1) Write four Boolean rules of Boolean algebra.
- 2) What is K-MAP ?
- 3) State De-Morgan's theorems.
- 4) Draw block diagram of 4 to 1 multiplexer.
- 5) What is ASCII explain with example.
- 6) What is race around condition in JK flip-flop ?
- 7) Draw diagram of half subtractor.
- 8) Write conversion of gray to binary and binary to gray with one example each.
- 9) What is 1's complement and 2's complement explain with one example.

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

- 1) Write conversion of binary to decimal and decimal to binary with one example each.
- 2) Explain full adder with neat diagram.
- 3) Explain ring counter.

B) Explain IC 74150. **4**

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

- 1) What is counter ? Explain 3-bit synchronous and asynchronous up counter.
- 2) What are universal gates ? Explain interconversion of gates using NAND gate.
- 3) What is shift register ? Explain all types shift register with necessary diagrams.

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

- 1) What is flip-flop ? Explain T flip-flop and D flip-flop.
- 2) What is tree multiplexing ? Explain how to build 32 to 1 multiplexer using 4 to 1 multiplexer.
- 3) Explain 4 variables K-MAP with one example.



Seat No.	
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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018**  
**MATHEMATICS (Paper – VI)**  
**Discrete Structures**

Day and Date : Thursday, 5-4-2018  
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 indicate full marks.**  
3) **Use of calculator is allowed.**

1. Choose the correct alternative :

14

- 1) If in adjacency matrix of a graph  $G$ , all the diagonal entries are zero and all the non diagonal elements are either 0 or 1 then graph  $G$  is \_\_\_\_\_ graph.  
a) Simple                      b) Pseudo                      c) Multi                      d) Complete
- 2) A null graph on 5 vertices is \_\_\_\_\_ regular graph.  
a) 4                                  b) 5                                  c) 0                                  d) 1
- 3) Spanning subgraph of a graph  $G$  is always \_\_\_\_\_ subgraph.  
a) Vertex deleted  
b) Edge deleted  
c) Both vertex deleted and edge deleted  
d) Neither vertex deleted nor edge deleted
- 4) If  $G_1(V_1, E_1)$  and  $G_2(V_2, E_2)$  be the two graphs then vertex set of the graph  $G_1 \oplus G_2$  is \_\_\_\_\_  
a)  $V_1 \oplus V_2$                       b)  $V_1 \cap V_2$                       c)  $V_1 \cup V_2$                       d)  $V_1 \times V_2$
- 5) A walk in which no vertex is repeated is called as \_\_\_\_\_  
a) Path                                  b) Trial                                  c) Circuit                                  d) Tour
- 6) If a connected graph  $G$  has 4 isthmus (cut edge) then edge connectivity of  $G$  is \_\_\_\_\_  
a) 0                                  b) 1                                  c) 2                                  d) 3



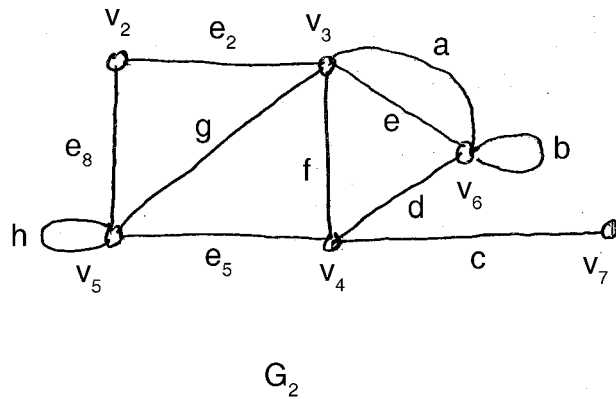
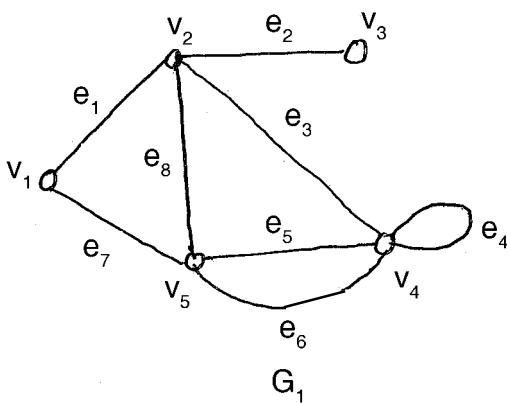




- 7) Define multi graph. Give one example.
- 8) Define linear recurrence relation with constant coefficients.
- 9) Draw a graph which is Hamiltonian but not Eulerian.

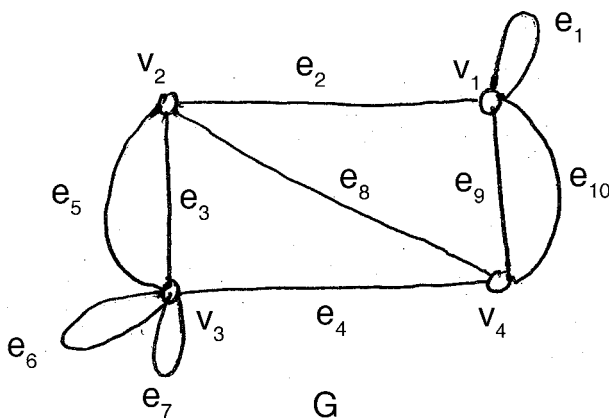
3. A) Attempt **any two** of the following : 10

- 1) Let  $G$  be a graph with 'p' number of vertices, 'r' of which have degree 'K' and others have degree  $(K + 1)$ . Prove that  $r = p(K + 1) - 2q$ , where 'q' is the number of edges in  $G$ .
- 2) Write a brief note on Koningberg's seven bridge problem.
- 3) From the following graphs  $G_1$  and  $G_2$ , draw the graph  $G_1 \oplus G_2$ .



B) From the following graph  $G$ , draw the subgraphs : 4

- i)  $G - V_1$
- ii)  $G - \{e_2, e_4\}$
- iii) Vertex disjoint subgraphs
- iv) Edge disjoint subgraphs.





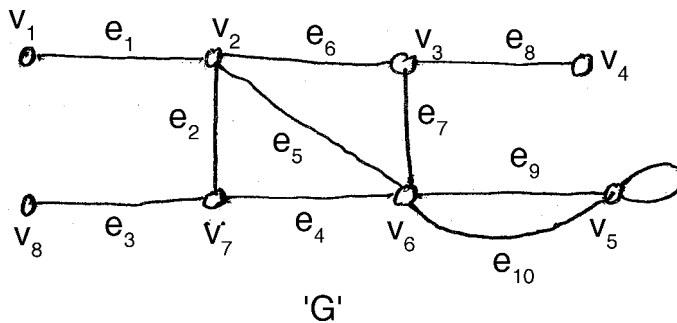
4. Attempt **any two** of the following :

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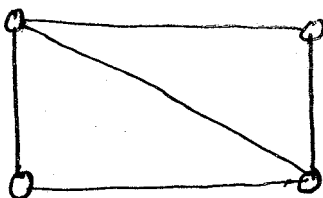
1) Define :

- i) Isthmus
- ii) Cut vertex
- iii) Vertex connectivity.

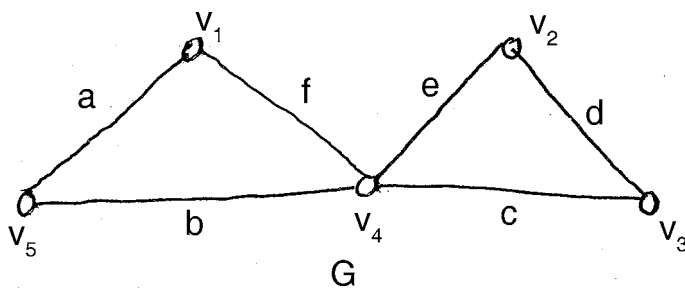
Hence find all isthmus and cut vertex of the following graph G. Also write its vertex connectivity.



2) Define shortest spanning tree. Hence draw all possible spanning trees of the following connected graph G.



3) Write Fleury's algorithm. Hence find Eulerian circuit in the following connected graph G, by using Fleury's algorithm.

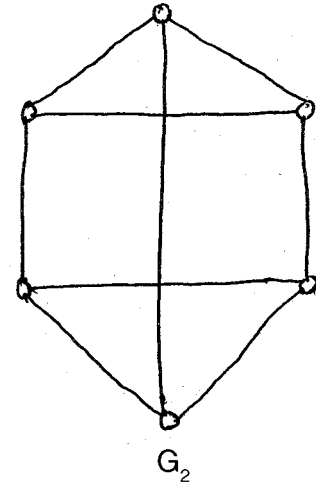
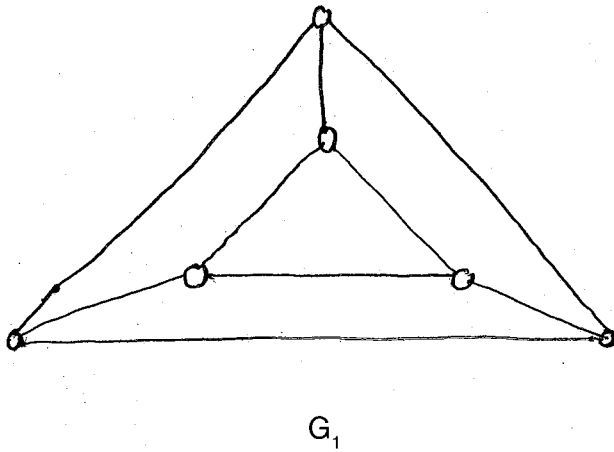




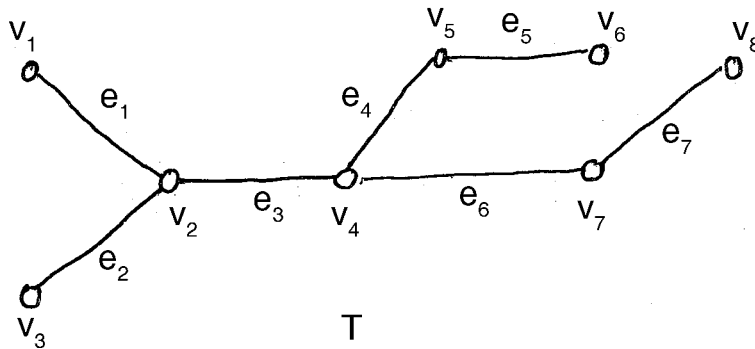
5. Attempt **any two** of the following :

14

- 1) Define self complementary graph. Hence prove that in a self complementary graph, the number of vertices are of the type  $4K$  or  $4K + 1$ , where 'K' is any integer.
- 2) Determine whether the following graphs are isomorphic or not ?



- 3) Define eccentricity of a vertex, radius of a tree, diameter of a tree. Hence find eccentricity of all vertices, centre, radius of the following tree :





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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018**  
**MATHEMATICS**  
**Numerical Methods (Paper – VII)**

Day and Date : Friday, 6-4-2018  
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 indicate full marks.*  
3) *Use of scientific calculator is allowed.*

1. Choose the correct alternative :

14

- 1) The one of the roots of the equation  $f(x) = x^2 - 4x - 10 = 0$  lies in the interval  
a) (5, 6)                      b) (-1, 0)                      c) (4, 5)                      d) (3, 4)
- 2) The value of  $\Delta^n e^x = \underline{\hspace{2cm}}$  by taking  $h = 1$ .  
a)  $(e - 1)^n e^x$                       b)  $(e + 1)^n e^x$                       c)  $e^{nx}$                       d)  $(e - 1)e^x$
- 3) If all the variables of system of linear equations are leading variables, then the system possess                      solutions.  
a) no                      b) two                      c) infinitely many                      d) unique
- 4) While doing multiplication of two numbers in normalised floating point notation, the mantissa's should be  
a) multiplied                      b) subtracted                      c) added                      d) made equal
- 5) Simpson's  $\left(\frac{1}{3}\right)^{\text{rd}}$  rule is obtained by putting  $n = \underline{\hspace{2cm}}$  in the general quadrature formula.  
a) 0                      b) 1                      c) 3                      d) none of these
- 6)                      method is used to solve ordinary differential equation.  
a) Taylor's series                      b) Gauss-Seidel  
c) Bisection                      d) Regula-Falsi
- 7) Which of the following relation is true ?  
a)  $E^{-1} = 1 + \Delta$                       b)  $E = 1 + \nabla$                       c)  $E = 1 + \Delta$                       d)  $E = 1 - \Delta$

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- 8) The next iterative value of the root  $x^2 - 4 = 0$  by using Newton-Raphson method, if the initial guess of root is 3 is  
 a) 2.1667                      b) 2.0167                      c) 1.5116                      d) 3.0016
- 9) Interpolation means estimating a value which lies  
 a) Outside the range of the dependant variables  
 b) Outside the given range of arguments  
 c) Within the given range of arguments  
 d) None of these
- 10)  $0.8467 \text{ E}3 \times 0.9876 \text{ E}4 =$   
 a)  $0.8362 \text{ E}7$     b)  $8.3620 \text{ E}7$   
 c)  $0.8362 \text{ E}12$     d)  $0.8362 \text{ E}-1$
- 11) If Runge-Kutta IV<sup>th</sup> order method  $K_2 =$   
 a)  $hf(x_0, y_0)$     b)  $hf(x_0 + h, y_0 + k_1)$   
 c)  $f(x_0 + h, y_0 + k_1)$     d)  $h.f(x_0, y_0 + k_1)$
- 12) Homogeneous system of linear equations is  
 a) always inconsistent    b) never consistent  
 c) always consistent    d) both (b) and (c)
- 13) \_\_\_\_\_ method is used to accelerate the convergence of iterative methods.  
 a) Aitken's process    b) Newton-Raphson  
 c) Taylor's    d) Lagrange's
- 14) The equations which include trigonometric, exponential and logarithmic functions are known as \_\_\_\_\_ equations.  
 a) polynomial    b) algebraic  
 c) special    d) transcendental

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

**14**

- 1) Prove that  $E\nabla = \Delta$ .
- 2) Write augmented matrix representing the following system of linear equations.  
 $3x + 2y - 5z = -7$ ;  $-3x + 7y = 0$ ;  $y + 5z - 5 = 0$ .
- 3) State general quadrature formula for equidistant ordinates.
- 4) State Lagrange's interpolation formula for 4 ordinates.

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- 5) State the formulae to find  $k_1$  and  $k_4$ , in Runge-Kutta IV<sup>th</sup> order method.
- 6) Find first approximate value for the root of equation  $f(x) = x^2 - 3x + 2$  by using Newton- Raphson method. Take initial approximation  $x_0 = 0$ .
- 7) Define absolute error.
- 8) Find the interval in which one of the roots of equation  $x^3 - 36.28 = 0$  lies.
- 9) Prepare the forward difference table for the following data.

<b>x</b>	5	10	15	20
<b>y = f(x)</b>	0.9869	0.6872	0.7802	0.5999

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

- 1) Solve the following system of linear equations by using Gauss elimination method.  
 $2x + 3y - z = 6; x - y + 2z = 3; x + y + z = 4.$
- 2) Solve  $\frac{dy}{dx} = 1 + xy$  by using Taylor's series method. Given that  $x_0 = 1, y_0 = 2.1$ . Find  $y(1.5)$  in one step.
- 3) Derive Newton-Raphson formula to find root of the equation  $f(x) = 0$ .

B) Evaluate the following. Write your answers in normalised floating point form. **4**

- i)  $0.7656 E5 + 0.6896 E4$
- ii)  $0.8692 E3 - 0.4653 E2$
- iii)  $3.14 28 E - 2 \times 2.1819 E4$
- iv)  $0.7172 E5 \div 0.2160 E - 3$

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

- 1) Evaluate  $\int_0^{\pi/2} \cos x \cdot dx$  by using simpson's  $\left(\frac{1}{3}\right)^{rd}$  rule, by dividing the interval into 8 equal parts.
- 2) Derive Newton's Forward difference interpolation formula.
- 3) Use Euler's method to estimate  $y(0.1)$  in 4-steps for the differential equation

$$\frac{dy}{dx} = \frac{y - x}{y + x} \text{ with initial conditions } x_0 = 0, y_0 = 1.$$



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

**14**

- 1) By using Lagrange's interpolation formula estimate the value of  $f(2.5)$  from the data given below :

<b>x</b>	-1	1	2	3
<b>y = f(x)</b>	-25	11	8	-1

- 2) Write an algorithm to solve system of 'm' linear equations in 'n' variables by using Gaussian Elimination method.
- 3) Find approximate value of root of the equation.  
 $f(x) = e^x - 4x = 0$  by using Regula-Falsi method. Perform only three iterations.
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**B.Sc. (ECS) – I (Semester – I) (CBCS Pattern) Examination, 2018**  
**Paper – VIII : DESCRIPTIVE STATISTICS – I**

Day and Date : Saturday, 7-4-2018

Max. Marks : 70

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

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

1. Choose most correct alternative :

14

- 1) Testing of human blood by taking few drops from body is an example of
  - a) SRSWOR
  - b) SRSWR
  - c) Systematic sampling
  - d) Stratified sampling
- 2) The most appropriate method of studying population, when elements of population are destroyed at the time of investigation is
  - a) Sampling
  - b) Census
  - c) SRSWOR
  - d) Stratified
- 3) Annual income of a person is
  - a) An attribute
  - b) A discrete variable
  - c) A continuous variable
  - d) None of these
- 4) Pie diagram is used for
  - a) Representing qualitative data in a circle
  - b) Representing quantitative data in a circle
  - c) Comparing different components and their relation to the total
  - d) None of these
- 5) A relative frequency distribution represents frequencies in terms of
  - a) Fraction with sum one
  - b) Fraction with sum not one
  - c) Percentage
  - d) a) and b) both
- 6) From ogives we can obtain
  - a) mean
  - b) median
  - c) mode
  - d) all of these
- 7) Which one of the following is not uniquely defined ?
  - a) mean
  - b) median
  - c) mode
  - d) all of these



- 8) The measure of central tendency that based on all observations is  
a) A.M.                      b) Median      c) Mode                      d) All of these
- 9) Quartiles are the values dividing a given set of observations into  
a) Two equal parts                      b) Four equal parts  
c) Three equal parts                      d) Five equal parts
- 10) If the profits of a company remains the same for the last ten months, then the standard deviation of profits for these ten months would be  
a) positive                      b) negative      c) zero                      d) None of these
- 11) If the range of X is 2, what would be the range of  $3X + 50$  ?  
a) 2                      b) 6                      c) - 6                      d) 44
- 12) The measure of dispersion that free from unit in which data is expressed is  
a) Range                      b) Q.D.                      c) S.D.                      d) C.V.
- 13) For a negatively skewed distribution  
a)  $\mu_1 < 0$                       b)  $\mu_2 < 0$                       c)  $\mu_3 < 0$                       d)  $\mu_1, \mu_2$  and  $\mu_3 < 0$
- 14) The measure of kurtosis is based on  
a) Odd ordered raw moments      b) Even ordered raw moments  
c) Odd ordered central moments      d) Even ordered central moments

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

14

- 1) Define population, sample.
- 2) Define :
  - i) class frequency
  - ii) mid-point of a class
- 3) The A.M. of observations 10, 15, x, 30, 50 is 26, find the value of x.
- 4) Given :  $n = 7$ ,  $\Sigma x = 584$ ,  $\Sigma x^2 = 48860$ , find c.v.
- 5) Define range and variance.
- 6) Explain procedure of obtaining median in case of continuous frequency distribution.
- 7) Find mean, if coefficient of skewness = 3.8, median = 35 and S.D. = 12.
- 8) Given  $\mu_1' = 2$ ,  $\mu_2' = 20$ ,  $\mu_3' = 40$  find  $\mu_3$ .
- 9) For a frequency distribution, Bowley's coefficient of skewness is - 0.059,  $Q_1 = 58.24$  and median = 61.8 find  $Q_3$ .



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

1) What is census method ? Explain the limitations of census method.

2) Find Range and S.D. for the following data :

<b>Class :</b>	2-4	4-6	6-8	8-10	10-12
<b>Freq. :</b>	7	10	20	8	5

3) From the following data, find the missing frequency when Mean is 15.38.

<b>Size :</b>	10	12	14	16	18	20
<b>Freq. :</b>	3	7	–	20	8	5

B) The first 4 raw moments of a frequency distribution are 1, 6, 7 and 64 respectively. Find coefficient of skewness and comment on result. 4

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

1) What is measure of dispersion ? State different absolute and relative measures of dispersion.

2) For the data given below, draw histogram hence find the value of mode.

<b>Class :</b>	20-25	25-30	30-35	35-40	40-45	45-50	50-55
<b>Freq. :</b>	9	12	19	25	20	13	5

3) The A.M. of wages of male and female employees of a firm is Rs. 8,000. The mean wage of male employees is Rs. 12,000 and that of female employees is Rs. 7,000. Find ratio of male employees to female employees in the firm.

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

1) What is kurtosis ? With the help of diagram explain types of Kurtosis with its interpretation.

2) The distribution of weight of 150 students is given below. Find median of the distribution.

<b>Weight (in kg.)</b>	30-40	40-50	50-60	60-70	70-80	80-90
<b>No. of students</b>	8	27	35	17	5	3

3) For two groups of observations following results were obtained.

Group – I  $\Sigma(X-5) = 8, \Sigma(X-5)^2 = 40 \quad n_1 = 20$

Group – II  $\Sigma(Y-8) = -10, \Sigma(Y-8)^2 = 70 \quad n_2 = 25$

Find S.D. of the combined group.



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**B.Sc. (ECS) (Part – I) (Semester – I) (CBCS-Pattern) Examination, 2018**  
**Paper – IX : PROBABILITY THEORY – I**

Day and Date : Monday, 9-4-2018  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

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

1. Select most correct alternative :

14

- 1) If A and B are two events, the probability of occurrence of A and B simultaneously is given by  
a)  $P(A) + P(B)$       b)  $P(A \cup B)$       c)  $P(A \cap B)$       d)  $P(A) * P(B)$
- 2) Value of  ${}^{12}C_4 + 12{}^{12}C_3$  is \_\_\_\_\_  
a) 715      b) 710      c) 716      d) None of these
- 3)  ${}^n P_4 = 12 {}^n P_2$  the value of n is \_\_\_\_\_  
a) 12      b) 6      c) 1      d) Both b) and c)
- 4) How many four digit number can be formed digits using 1, 2, 3 ...7 ?  
a)  ${}^7 P_4$       b)  ${}^7 P_3$       c)  ${}^8 C_3$       d) None of these
- 5) A committee is to be formed of 2 teachers and 3 students out of 10 teachers and 20 students, the number of ways in which this can be done is \_\_\_\_\_  
a)  ${}^{10}C_2 X {}^{20}C_5$       b)  ${}^9 C_1 X {}^{20}C_3$       c)  ${}^{10}C_2 X {}^{19}C_2$       d) None of these
- 6) Expectation of constant is \_\_\_\_\_  
a) Zero      b) Constant  
c) Dose not exist      d) None of these
- 7) If X and Y are two random variables such that  $X \geq Y$  and having uniform distribution then \_\_\_\_\_  
a)  $E(X) \geq E(Y)$       b)  $E(X) > E(Y)$       c)  $E(X) = E(Y)$       d)  $E(Y) \geq E(X)$
- 8) If X is binomial variable with parameters (n, p), mean of distribution is \_\_\_\_\_  
a) np      b) npq      c) nq      d) None of these
- 9) If discrete random variable X taking values 0, 1, 2, 3 with probability 0.1, 0.15, 0.2 and K respectively then value of K is \_\_\_\_\_  
a) 0.45      b) 1.15      c) 0.55      d) 0.65

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- 10) In  ${}^n C_r$
- a)  $n > r$                       b)  $n < r$                       c)  $n \geq r$                       d) None of these
- 11) If  $P(A) = 1 - P(B)$  then
- a) A and B are independent events                      b) A and B mutually exclusive events  
c) B is complementary event of A                      d) All of the above
- 12) \_\_\_\_\_ distribution has mean and variance are equal always.
- a) Poission                      b) Geometric                      c) Bernoulli                      d) Uniform
- 13) If mean and variance of binomial distribution is 10 and 6 respectively then  
 $p =$  \_\_\_\_\_
- a) 2                      b) 25                      c) 15                      d) 21
- 14) If A and B are independent events then \_\_\_\_\_
- a)  $P(A/B) = P(A)$                       b)  $P(\bar{A}/\bar{B}) = P(\bar{A})$   
c)  $P(\bar{A}/B) = P(\bar{A})$                       d) All of these

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

14

- 1) Define expectation of discrete r.v.
- 2) Define c.d.f. of discrete r.v.
- 3) Define mutually exhaustive events.
- 4) Define conditional probability.
- 5) If  $X \rightarrow H(18, 6, 3)$ , find the variance of X.
- 6) If  $P(A) = 0.2$  and  $P(B) = 0.6$ , if A and B are independent, find probability that at least one of A or B will happen.
- 7) A person has 12 friends of whom 8 are relatives. In how many ways can be invite 7 guests such that 5 of them are relative ?
- 8) Verify whether the following function can be considered as p.m.f.

$$P(X = x) = \frac{x^2 + 1}{18} \quad x = 0, 1, 2, 3.$$

- 9) A random variable X has probability distribution

$$P(X = x) = \frac{x}{15} \quad x = 1, 2, 3, 4, \text{ find } E(x).$$

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

10

- 1) Find the value x if  ${}^{14}C_5 + {}^{14}C_6 + {}^{15}C_7 + {}^{16}C_8 = {}^{17}C_x$
- 2) From well shuffled pack of 52 cards, two cards are drawn one by one keeping 1<sup>st</sup> card aside, what is probability of
  - a) both will be King cards ?
  - b) 1<sup>st</sup> will be King and 2<sup>nd</sup> will be Queen card.

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3) Probability distribution of random variable X is given by

<b>X</b>	1	2	3	4	5	6
<b>P(X)</b>	0.1	0.1	0.2	0.3	0.2	0.1

Calculate  $P[(1 \leq X \leq 3)/(X > 2)]$ .

B) If A is sub set of B then prove that  $P(A) \leq P(B)$ . **4**

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

- 1) Define Binomial distribution. State its additive property, mean and variance. Give two real life situations where it is applicable.
- 2) Two dice are thrown simultaneously, write the sample space. Find the probability that sum of two numbers on upper most surface of dice will be
  - a) 9
  - b) More than 10
- 3) A box containing 7 red balls, 6 white balls, and 4 blue balls. How many selection of three balls can be made such that
  - a) All 3 are red
  - b) None is red
  - c) One of each color.

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

- 1) Show that
  - a)  ${}^n C_r + {}^n C_{r-1} = {}^{n+1} C_r$
  - b)  $n {}^n C_{r-1} = r {}^n C_r + (r - 1) {}^n C_{r-1}$ .
- 2) If 1.5% of LED bulbs produced by company are defective. They are packed in boxes containing 100 bulbs each. In a consignment of 500 boxes how many are expected to have 2 defectives ?
- 3) A box contains 10 red and 8 black balls, 4 balls are drawn on by one without replacement. Find probability of getting.
  - a) 3 black balls
  - b) 3 red balls.

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**B.Sc. (Part – I) (ECS) (Semester – II) (CBCS Pattern) (Old) Examination, 2018**  
**Paper – I : ENGLISH (Compulsory)**  
**On Track – English Skills for Success**

Day and Date : Thursday, 12-4-2018

Max.Marks : 70

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

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

2) **Figures to the right indicate full marks.**

1. Rewrite the following sentences by choosing the correct alternatives : **14**

- 1) According to Nani Palkhivala \_\_\_\_\_ is the eighth deadly sin.  
a) Hatred                      b) Anger                      c) Ignorance                      d) Ideology
- 2) \_\_\_\_\_ have created more deaths and human misery than all the weapons of mass destruction.  
a) Strife    b) War  
c) Human rights violations                      d) None of the above
- 3) Vivekananda's first night in Chicago after having met J. H. Wright was spent  
a) At the house of Wright's friend                      b) In a wooden cabin  
c) In a big, empty box    d) None of the above
- 4) Who represented Theosophical Society in the parliament of religion at Chicago ?  
a) Vivekanand    b) Gandhi  
c) Dharmapala    d) Chakravarti and Annie Besant
- 5) Which of the following place did Vivekananda not pass while travelling to America ?  
a) Ceylon                      b) Singapore                      c) Australia                      d) Penang
- 6) Dr. Kalam had tested \_\_\_\_\_ successfully in France.  
a) SLV-3 apogee motor    b) V-2 Missile  
c) Jupiter Missile    d) None of the above
- 7) Who suffer from Not Invented Here Complex (NIH) ?  
a) Germans                      b) Americans                      c) Russians                      d) French







3. A) Write short answers on **any two** of the following : **8**
- 1) What is the central theme of the poem 'Brahma' ?
  - 2) Does our perception of the moon has changed ? How ?
  - 3) How does Emerson use contrast in the poem effectively to convey his message ?
- B) Answer **any two** of the following questions briefly : **6**
- 1) What are the components of an official formal email letter ?
  - 2) What is a C.V. ?
  - 3) What are the features of a notice ?
4. Answer **any one** of the following question : **14**
- A) You are secretary of English Literary Association in your college. The association is organising a national level elocution competition for college students. Prepare the notice and agenda for the meeting of the association.
- B) You are Sunita Sharma, a postgraduate in Physics. Write an email application letter in response to an advertisement in the newspaper for the post of assistant professor in physics to the Principal, Modern College of Arts and Science, Mumbai.
5. You are postgraduate in Commerce. Prepare a C. V. for the post of Assistant Manager in a Co-operative bank. **14**
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**B.Sc. – I (ECS) (Semester – II) (New CBCS) Examination, 2018**  
**ENGLISH COMPULSORY**  
**Golden Petals**

Day and Date : Thursday, 12-4-2018  
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 indicate full marks.**

1. Rewrite the following sentences by choosing the correct option given below : **14**

- 1) Letter to a teacher was written by \_\_\_\_\_ students.  
a) 7                      b) 8                      c) 5                      d) 3
- 2) 'My Duty to My Neighbour' is taken from the book \_\_\_\_\_  
a) The Value of Life                      b) The Value of Society  
c) The Value of Neighbour                      d) The Value of Relations
- 3) Jim Corbett was born in \_\_\_\_\_  
a) 1875                      b) 1865                      c) 1855                      d) 1845
- 4) \_\_\_\_\_ animal's alarm call did the author use to calm down the irritation of his throat.  
a) Cat                      b) Dog                      c) Langur                      d) Monkey
- 5) The English translation of 'Letter to a Teacher' was published in \_\_\_\_\_  
a) 1970                      b) 1960                      c) 1965                      d) 1955
- 6) The authors of the book 'Letter to a Teacher' belonged to \_\_\_\_\_ families.  
a) Affluent                      b) Middle class                      c) Peasant                      d) Poor
- 7) In \_\_\_\_\_ Sir Earnest Barker was elected as a member of Liberal Party Council.  
a) 1937                      b) 1939                      c) 1938                      d) 1936

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- 8) The grass plot was of \_\_\_\_\_ square feet.  
a) 19                      b) 20                      c) 30                      d) 25
- 9) Sarojini Naidu was the first woman President of \_\_\_\_\_ party.  
a) Jan Sangh                      b) Janta Party  
c) Lok Dal                      d) Indian National Congress
- 10) Maya Angelou was an \_\_\_\_\_ poetess.  
a) American                      b) African                      c) Asian                      d) European
- 11) \_\_\_\_\_ your hands for the exercise.  
a) Raise                      b) Raze                      c) Redge                      d) Ridge
- 12) Sachin doesn't lie, he would call a spade a \_\_\_\_\_.  
a) Tool                      b) Machine                      c) Spade                      d) Hammer
- 13) A person who has the fear of water, that fear is called \_\_\_\_\_.  
a) Zoophobia                      b) Demophobia c) Bathophobia                      d) Hydrophobia
- 14) It is \_\_\_\_\_ to bribe anybody.  
a) Illicit                      b) Elicit                      c) Ellicit                      d) Aellicit

2. Answer the following questions in **2 to 3** sentences **each (any seven)** : **14**

- 1) In what way is the school different from the students homes ?
- 2) Where do the students go when they are failed out of school ?
- 3) What is the claim of a larger piety ?
- 4) What are our duties towards a neighbour ?
- 5) Why can't tigers lie in one position for long ?
- 6) What can be assumed from a tiger leaving his kill in the open ?
- 7) Why did Jim Corbett regret carrying an unlocked rifle ?
- 8) What did Jim Corbett do after killing the tiger ?

3. A) Answer the following in about **fifty** words (**any two**) : **8**

- 1) What is an Email and what type of language is used for writing it ?
- 2) Write a short note on different types of blogs.
- 3) Write a short note on how to write blogs.



B) Answer **any two** with reference to context : **6**

- 1) Weavers, weaving solemn and still,  
What do you weave in the moon light chill ?  
White as a feather and white as a cloud.
- 2) I can accept the idea of my own demise,  
but I am unable to accept the death of any one else.
- 3) Weavers, weaving at break of day,  
Why do you weave a garment so gay ?  
Blue as the wing of a halcyon wild.

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

- 1) Write in detail how you will prepare for an interview.
- 2) Write a script of group discussion on the topic-cleanliness movement in India, in which Rajesh, Shruti, Mohan and Noor participate.

5. Answer the following question : **14**

You are the Secretary of Mahavir Garments Ltd. The meeting of the office-bearers of the company is scheduled for the 10<sup>th</sup> of the next month. Prepare an agenda for the meeting then draft the minutes of the meeting using the standard format.

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**B.Sc. (ECS) (Part – I) (Semester – II) (CBCS) Examination, 2018  
INTRODUCTION TO WEB DESIGNING (Paper – II)**

Day and Date : Friday, 13-4-2018  
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 the correct alternative :

14

- 1) The default character encoding in HTML5 is \_\_\_\_\_  
a) ASCII                      b) UTF-8                      c) ISO-8856-1                      d) UTF-16
- 2) \_\_\_\_\_ element of HTML5 is used to draw graphics through scripting.  
a) <figcaption>                      b) <mark>                      c) <header>                      d) <canvas>
- 3) Vlink attribute of body tag means \_\_\_\_\_  
a) Visited link                      b) Virtual link  
c) Value link                      d) Very good link
- 4) <SCRIPT> . . . </SCRIPT> tag can be placed within \_\_\_\_\_  
a) Body                      b) Head  
c) Both a) and b)                      d) None of the these
- 5) If <!DOCTYPE html> is not used in HTML5 still browser will be able to identify that it's a HTML document.  
a) True                      b) False
- 6) \_\_\_\_\_ tag is used to display Preformatted texts in HTML.  
a) <pre>...</pre>                      b) <pretext>...</pretext>  
c) <preformat>...</preformat>                      d) <preformattext>...</preformattext>
- 7) The \_\_\_\_\_ property allows indenting the first line of text in an element.  
a) text-align                      b) text-justify  
c) indent-text                      d) text-indent



- 8) \_\_\_\_\_ statement returns the element that has the ID attribute with the specified value.
- a) document.ElementById()                      b) document.getByld()  
c) document.getElementByld()                  d) document.getId()
- 9) \_\_\_\_\_ is the combination of HTML, JavaScript, DOM and CSS.
- a) COM                      b) XML                      c) DHTML                      d) XSLT
- 10) \_\_\_\_\_ tag insert a box for address in web form.
- a) <box>                      b) <textarea>                      c) <input>                      d) <select>
- 11) The \_\_\_\_\_ property specifies the boldness of text.
- a) Font-weight                      b) Font-bold  
c) Font-text                      d) Font-width
- 12) parseInt(“How are you”) in javascript shows \_\_\_\_\_
- a) NaN                      b) 0                      c) 1                      d) Error
- 13) Two or more arrays are joined into single array by using \_\_\_\_\_ function of Array object.
- a) join()                      b) concat()                      c) merge()                      d) combine()
- 14) \_\_\_\_\_ property of history object returns the number of URLs in the history list.
- a) historyno                      b) historylength                      c) length                      d) totalurl

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

**14**

- 1) What is singular and paired tags ?
- 2) What is use of <pre> tag ? Give example.
- 3) What is selector, property and value ?
- 4) List out border properties used in CSS.
- 5) What is DOCTYPE element used in HTML5 ?
- 6) List out HTML5 Input elements which are not in HTML.
- 7) Explain any 4 methods of window object.
- 8) Explain different looping statements in JavaScript.
- 9) What is structure of HTML ?

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3. A) Answer the following (**any 2**) : **10**
- 1) Explain graphics in HTML5.
  - 2) Explain nav with example used in HTML5.
  - 3) Explain control structure used in JavaScript with example.
- B) Explain Network topology in detail. **4**
4. Answer the following (**any 2**) : **14**
- 1) What is CSS ? Explain different type of CSS with its example.
  - 2) Write JavaScript for prime number and even number.
  - 3) Explain with example different types of list used in HTML.
5. Answer the following (**any 2**) : **14**
- 1) Write JavaScript for Armstrong number and odd number.
  - 2) Explain any 7 text formatting tag with example.
  - 3) What is Hyperlink ? Explain how to create hyperlink within document with example.
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**B.Sc. (E.C.S.) – I (Semester – II) Examination, 2018**  
**COMPUTER SCIENCE (Paper – III)**  
**Introduction to Programming Using C – II (CBCS)**

Day and Date : Monday, 16-4-2018  
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) The function scanf ( ) returns \_\_\_\_\_
    - A) The actual values read for each argument
    - B) 1
    - C) The number of successful read input values
    - D) 0
  - 2) When a C program is started, O.S. environment is responsible for opening file and providing pointer for that file ?
    - A) Standard input
    - B) Standard output
    - C) Standard error
    - D) All of the mentioned
  - 3) Use of functions \_\_\_\_\_
    - A) Helps to avoid repeating a set of statements many times
    - B) Enhances the logical clarity of the program
    - C) Helps to avoid repeated programming across programs
    - D) All of the above
  - 4) stderr is similar to ?
    - A) stdin
    - B) stdout
    - C) both stdout and stdin
    - D) None of the mentioned
  - 5) The scope of variable used is anywhere in the program called as \_\_\_\_\_ variable.
    - A) External
    - B) Static
    - C) Global
    - D) Local





- 6) The recursive functions are executed in a \_\_\_\_\_  
A) Parallel order                      B) First in first out order  
C) Last in first out order            D) Iterative order
- 7) A self contained block of statement that perform specific task is called \_\_\_\_\_  
A) Array              B) Function      C) Pointer            D) Structure
- 8) The value of EOF is \_\_\_\_\_  
A) -1              B) 0              C) 1              D) 10
- 9) Number of bytes in memory taken by the below structure is ?  
struct test  
{  
int k;  
char c;  
};  
A) Multiple of integer size            B) Integer size + character size  
C) Depends on the platform          D) None of these
- 10) What is the return value of putchar ( ) ?  
A) The character written              B) EOF if an error occurs  
C) Nothing                              D) Both A) and B)

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

4

- 1) The symbolic constant EOF is defined in <stdio.h>.
- 2) One of elements of a structure can be a pointer to the same structure.
- 3) Functions can be called either by value or reference.
- 4) It is possible to create an array of pointer to structures.

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

14

- 1) Write the purpose of fclose( ) and fopen( ) function.
- 2) State return types used in C language.
- 3) What is prototype of a function ?
- 4) What is string ?
- 5) Write the general syntax of function definition.

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- 6) What is buffer ?
  - 7) What is local variable ?
  - 8) What is function ?
  - 9) Define Nested structure.
3. A) Answer **any two** of the following : **10**
- 1) Explain Dynamic memory allocation in detail.
  - 2) What is union ? Explain with example.
  - 3) Write a program in C to check the palindrome string without string function.
- B) Explain storage classes. **4**
4. Answer **any two** of the following : **14**
- 1) Explain simple library functions in Graphics.
  - 2) Define file. Explain their modes.
  - 3) Write a program in C to calculate the factorial of given number by using function with argument with no return value.
5. Answer **any two** of the following : **14**
- 1) Define structure. Explain structure to pointer with example.
  - 2) Explain macros in detail.
  - 3) Write a program in C to copy one file into another.
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**B.Sc. (ECS) – I (Semester – II) (CBCS) Examination, 2018**  
**LINEAR ELECTRONICS – II (Paper – IV)**

Day and Date : Tuesday, 17-4-2018  
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.**  
3) **Neat diagram must be drawn wherever necessary.**

1. Choose correct alternatives :

14

- 1) FET is \_\_\_\_\_ transistor.  
a) Bipolar                      b) Unipolar                      c) Unijunction                      d) None of these
- 2) The Frequency of Oscillation remains very stable in \_\_\_\_\_ oscillator.  
a) Crystal                      b) Hartley                      c) Colpitts                      d) Wein Bridge
- 3) Thermister has \_\_\_\_\_ temperature coefficient.  
a) Negative                      b) Positive                      c) Both a and b                      d) None of these
- 4) Free running multivibrator is \_\_\_\_\_  
a) Monostable                      b) Astable                      c) Bistable                      d) None of these
- 5) RC combination give \_\_\_\_\_ degree phase shift in phase shift oscillator.  
a) 60                      b) 90                      c) 180                      d) None of these
- 6) RTD has \_\_\_\_\_ temperature coefficient.  
a) Negative                      b) Positive                      c) Both a and b                      d) None of these
- 7) Oscillator circuit convert \_\_\_\_\_ energy.  
a) AC to AC                      b) AC to DC                      c) DC to AC                      d) None of these
- 8) Operational amplifier gives \_\_\_\_\_ degree phase shift.  
a) 60                      b) 90                      c) 180                      d) None of these
- 9) In Wein Bridge oscillator \_\_\_\_\_ feedback used.  
a) Positive                      b) Negative  
c) Both positive and negative                      d) None of these
- 10) \_\_\_\_\_ is programmable logic device.  
a) FPGA                      b) CPLD                      c) PLD                      d) PLA
- 11) \_\_\_\_\_ is FAN OUT of TTL IC.  
a) 10                      b) 50                      c) 100                      d) 2



- 12) \_\_\_\_\_ is fastest Logic Family.  
a) TTL                      b) CMOS                      c) RTL                      d) ECL
- 13) Transducer converts mechanical energy into \_\_\_\_\_  
a) Mechanical              b) Electrical              c) Sound                      d) None of these
- 14) Noise Margin of TTL \_\_\_\_\_  
a) 200 mv                      b) 400 mv                      c) 60 mv                      d) 100 mv

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

- 1) Define sensor.
- 2) Define oscillator.
- 3) What is meant by resolution ?
- 4) Draw construction and symbol of Depletion MOSFET.
- 5) Define noise margin in IC family.
- 6) Explain TTL logic family.
- 7) Write application of motors.
- 8) Define astable multivibrator.
- 9) Draw pin diagram of IC 555.

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

- 1) Draw and explain stepper motor in detail.
- 2) Define feedback and explain concept of positive feedback.
- 3) Explain SMT and SMD in brief.

B) Explain any four characteristics in measurement. 4

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

- 1) Explain with suitable diagram PLD.
- 2) What is multivibrator ? Explain monostable using IC 555.
- 3) Explain pressure sensor and IR sensor.

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

- 1) What is FET and its different types ? Explain construction and working of DEMOSFET.
- 2) Explain with suitable diagram PLA.
- 3) Define oscillator and explain phase shift oscillator.



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**B.Sc. (ECS) – I (Semester – II) (CBCS) Examination, 2018**  
**DIGITAL ELECTRONICS AND MICROPROCESSOR – II (Paper – V)**

Day and Date : Wednesday, 18-4-2018  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

1. Multiple choice questions :

14

- 1) Address bus of 8085 is \_\_\_\_\_ bit.  
a) 8                      b) 12                      c) 16                      d) 32
- 2) Read only memory is  
a) Volatile              b) Non volatile      c) Temporary      d) None of these
- 3) In R-2R ladder network DAC the input resistor for each input is  
a) R                      b) 3R                      c) 4R                      d) 2R
- 4) In 8085 accumulator is \_\_\_\_\_ bit.  
a) 12                      b) 8                      c) 6                      d) 16
- 5) The memory chip of 12 bit address line have capacity  
a) 1 KB                      b) 4 KB                      c) 16 KB                      d) 8 KB
- 6) After execution of push instruction SP  
a) Increment      b) Decrement      c) Constant      d) None of these
- 7) \_\_\_\_\_ instruction have implied addressing mode.  
a) MOV                      b) ADD                      c) RAR                      d) LXI
- 8) For 5 bit resistive network (0 = 0V, 1 = 20V) then, full scale output voltage is  
a) 5V                      b) 10V                      c) 20V                      d) 12V
- 9) Static RAM consist  
a) Capacitor      b) F/F                      c) Resistor      d) None of these
- 10) \_\_\_\_\_ is logical group of instruction.  
a) MOV                      b) XOR                      c) ADD                      d) POP
- 11) Unit of memory is  
a) Ohm                      b) GB                      c) kHz                      d) None of these
- 12) In 8085 \_\_\_\_\_ register shows address of next instruction.  
a) HL                      b) Acc                      c) PC                      d) SP
- 13) Trap is \_\_\_\_\_ interrupt.  
a) Maskable      b) Non maskable      c) Vector      d) None
- 14) All information is erased in \_\_\_\_\_  
a) ROM                      b) UV PROM      c) EEPROM      d) None



2. Answer **any seven** of the following : 14
- 1) Compare RAM and ROM.
  - 2) Draw flag structure in 8085.
  - 3) Define T state and machine cycle.
  - 4) Give application of DAC.
  - 5) Draw diagram static RAM cell with MOS.
  - 6) List data transfer group of instruction.
  - 7) Give parameters of DAC.
  - 8) Explain PROM.
  - 9) List specification of ADC.
3. A) Answer **any two** of the following : 10
- 1) Explain R2R ladder network.
  - 2) Write a program to add two 8 bit number.
  - 3) Explain diode matrix ROM.
- B) Write features of 8085. 4
4. Answer **any two** of the following : 14
- 1) Explain dual slope ADC in detail.
  - 2) Explain arithmetic group of instructions of 8085.
  - 3) Draw pin diagram of 8085.
5. Answer **any two** of the following : 14
- 1) Define addressing mode and explain their types.
  - 2) Compare I/O mapped I/O and memory mapped I/O with diagram.
  - 3) Draw architecture of 8085. Explain general purpose registers in detail.
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- 7) Contrapositive of the statement  $p \rightarrow q$  is \_\_\_\_\_  
a)  $q \rightarrow p$       b)  $\sim p \rightarrow \sim q$       c)  $\sim q \rightarrow \sim p$       d)  $\sim q \rightarrow p$
- 8) Binary operation  $*$  is said to be \_\_\_\_\_ if  $(a * b) * c = a * (b * c)$ .  
a) Associative      b) Commutative  
c) Both a) and b)      d) Neither a) nor b)
- 9) If  $R$  is a universal relation then all the elements in  $M(R)$  are \_\_\_\_\_  
a) 1 or 0      b) 1 and 0      c) 0      d) 1
- 10) The set \_\_\_\_\_ is called as co-domain of a function  $f : B \rightarrow A$ .  
a)  $A$       b)  $B$       c) Range      d) None of these
- 11) Imaginary part of the complex number  $z = (1 + i) + (2 - 3i)$  is \_\_\_\_\_  
a)  $-2$       b)  $2$       c)  $3$       d)  $-3$
- 12) If both the statements  $p$  and  $q$  have some truth values then the truth value of the compound statement  $p \leftrightarrow q$  is \_\_\_\_\_  
a)  $T$       b)  $F$   
c)  $T$  or  $F$       d) Can not be determined
- 13) A relation  $R$  defined on the set  $A$  is called as \_\_\_\_\_ relation if  $aRb$  and  $bRa$  implies that  $a = b$ , where  $a, b \in A$ .  
a) Reflexive      b) Symmetric  
c) Antisymmetric      d) Asymmetric
- 14) If  $f(x) = x^2 - 2x - 4$  then  $f(-3) =$  \_\_\_\_\_  
a) 11      b)  $-19$       c)  $-1$       d)  $-11$

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

14

- 1) Prepare truth table for the statement  $(p \rightarrow q) \leftrightarrow \sim q$ .
- 2) Let  $A = \{x, y, z\}$  and  $B = \{m, n\}$  then find  $A \times B$  and  $B \times A$ .
- 3) Define bijective function.
- 4) If  $z_1 = 3 - 2i$  and  $z_2 = 4 + 3i$  then find  $z_1 - z_2$ . Also write real part and imaginary part of  $z_1 - z_2$ .
- 5) Let  $*$  be the operation defined on  $z$  by  $a * b = a \cdot b + 3$ ,  $a, b \in z$ . Determine whether  $*$  is associative or not ?





- 6) State first principle of mathematical induction.
- 7) Let  $A = \{1, 2, 3\}$ . Let  $R$  be the relation defined on the set  $A$  given by  $R = \{(1, 2), (1, 3), (2, 1), (2, 2), (2, 3), (3, 3)\}$ . Write matrix of relation  $R$ . Also draw digraph of relation  $R$ .
- 8) Define tautology and contradiction.
- 9) Find modulus and argument of complex number  $z = \sqrt{3} + i$ .

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

- 1) Let  $\sim$  be an equivalence relation defined on a set  $A$ . Prove that any two equivalence classes are either disjoint or identical.
- 2) Define one-one function. Hence show that the function  $f : R \rightarrow R$  defined by  $f(x) = 3x - 4$ , for all  $x \in R$  is a one-one function.
- 3) Determine whether the following statement is tautology or contradiction or neither  $[p \wedge (p \vee q) \wedge \sim p] \rightarrow \sim q$ .

B) Let  $*$  be the binary operation defined on a set  $X = \{p, q, r, s\}$  whose multiplication table is given below :

*	p	q	r	s
p	s	p	q	r
q	p	q	r	s
r	q	r	s	p
s	r	s	p	q

Then find :

- i)  $(p * r) * (q * s)$
- ii) Is  $*$  commutative. Justify.
- iii) Find identity element w.r.t.  $*$ , if exists.
- iv) Find inverse of each element of  $X$  w.r.t.  $*$ , if exists.

4



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

14

1) By using principle of finite induction prove that  $1^2 + 2^2 + 3^2 + \dots +$

$$n^2 = \frac{n(n+1)(2n+1)}{6}, \text{ for all } n \geq 1.$$

2) Define complex conjugate of a complex number. Hence show that

$$\overline{z_1 \cdot z_2} = \overline{z_1} \cdot \overline{z_2}, \text{ where } z_1 = a + ib \text{ and } z_2 = c + id.$$

3) Let  $A = \{2, 4, 6, 8\}$ . Let  $R$  be the relation defined on the set  $A$  given by  $R = \{(2, 2), (2, 6), (4, 4), (4, 6), (6, 4), (6, 8), (8, 2)\}$ . Find transitive closure  $R^*$ , by using Klarshall's algorithm. Also draw digraph for  $R^*$ .

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

14

1) Test the validity of following argument, by preparing truth table. "If 3 divides 10 then 6 is an even number. 7 is not prime if and only if 3 divides 10. 7 is prime. Therefore 6 is an odd number."

2) Define domain of a function, injective function, surjective function and composition of functions.

3) Define real part and imaginary part of the complex number. Hence find real

part and imaginary part of the complex number  $z = \left( \frac{3 + 2i}{1 + i} \right)^2$ .

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**B.Sc. (E.C.S.) (Part – I) (Semester – II) (CBCS Pattern) Examination, 2018**  
**Operations Research (Paper – VII)**  
**MATHEMATICS**

Day and Date : Friday, 20-4-2018

Max. Marks : 70

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

- 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 artificial variable in the objective function of maximisation type LPP is  
a) R1                      b) +M                      c) –M                      d) 0
- 2) If in a  $m \times n$  T.P. number of occupied cells are less than  $m + n - 1$ , then the solution under test is \_\_\_\_\_ solution.  
a) IBFS                      b) Degenerate  
c) Non-degenerate                      d) Optimum
- 3) While solving A.P., we reach at optimum solution if  
a) all  $d_{ij} = 0$   
b) number of rows = number of columns  
c) all  $d_{ij} \geq 0$   
d) number of assignments made = number of rows or columns
- 4) The general objective of solving A.P. is to \_\_\_\_\_ the total assignment cost.  
a) stabilize                      b) maximise                      c) minimise                      d) all a), b) and c)
- 5) If in a unbalanced T.P.,  $\sum b_j < \sum a_i$  then we have to \_\_\_\_\_ in order to balance it.  
a) add a dummy column                      b) subtract a dummy column  
c) add a dummy row                      d) subtract a dummy row
- 6) A feasible solution to a linear programming problem  
a) must satisfy all the problems constraints simultaneously  
b) need not satisfy all of the problems constraints  
c) must be a corner point of the feasible region  
d) none of these

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- 7) In Big-M method, if an artificial variable is present in the optimum solution then the LPP has \_\_\_\_\_ solutions.  
 a) unique                      b) no                      c) unbounded                      d) infinitely many
- 8) \_\_\_\_\_ method is used to find optimum solution of T.P.  
 a) Hungarian                      b) Vogel's approximation  
 c) Modified distribution                      d) Least cost
- 9) If in a primal LPP there are 2 variables and 4 constraints then its dual has \_\_\_\_\_ variables and \_\_\_\_\_ constraints.  
 a) 2, 4                      b) 4, 2                      c) 2, 2                      d) 4, 4
- 10) To find optimum solution of A.P. \_\_\_\_\_ method is used.  
 a) North-West corner                      b) Least cost  
 c) MODI                      d) None of these
- 11) The objective function of the LPP in standard form is of \_\_\_\_\_ type.  
 a) Maximise                      b) Minimise  
 c) Maximise and Minimise                      d) None of these
- 12) In the optimality test of T.P. if all  $d_{ij} > 0$  with atleast one  $d_{ij} = 0$  then the solution under test is \_\_\_\_\_ solution.  
 a) alternate optimum                      b) not optimum  
 c) optimum and unique                      d) non-degenerate
- 13) Assignment Problem is said to be un-balanced if  
 a)  $\sum a_i \neq \sum b_j$   
 b)  $\sum a_i = \sum b_j$   
 c) number of rows is not equal to number of columns  
 d) number of rows is equal to number of columns
- 14) In graphical method, if the optimum value of the objective function occurs at two adjacent points of feasible region then the LPP posses \_\_\_\_\_ solution.  
 a) no                      b) unique                      c) infinitely many                      d) unbounded

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

14

- 1) Define non-generate solution of a  $m \times n$  T.P.
- 2) Define standard form of a LPP.
- 3) Define balanced A.P.
- 4) How will you convert the A.P. of maximise type into minimise type ?
- 5) Write tabular form of a T.P. (structure of T.P.) having 3 factories and 3-warehouses.
- 6) Write the standard form of the LPP given below :  
 Maximise  $z = x + 2y + z$ , subject to the constraints  
 $2x + y + z \leq 6$ ;  $x + y + z \leq 8$ ;  $3x + 4y + 2z \geq 10$ ;  
 $x, y, z \geq 0$ .

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7) Write the formula to find index numbers for occupied cells and the formula to find opportunity cost for an un-occupied cell in a T.P.

8) Convert the following A.P. of maximise type into minimise type.

	A	B	C	D
P	10	20	30	60
Q	18	12	60	28
R	22	28	30	52
S	8	32	38	6

9) Define decision variable.

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

10

1) Write a note on un-balanced T.P.

2) Write dual of the following LPP.

Minimise  $z = 2x + y + z$  subject to,

$$4x + 3y + 5z \geq 5; 3y + 2z \geq 8; 2x + 5z \geq 4$$

$$x + y + 2z \geq 2; x, y, z \geq 0.$$

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

	P <sub>1</sub>	P <sub>2</sub>	P <sub>3</sub>	P <sub>4</sub>
A	40	50	60	65
B	30	38	46	48
C	25	33	41	43
D	39	45	51	59

B) A person requires atleast 10, 12 and 14 units of chemicals A, B and C respectively for his garden. A liquid product contains 5, 2 and 3 units of the chemicals A, B and C respectively per jar. A dry product contains 2, 3 and 4 units of the chemicals A, B and C respectively per box. Cost of a jar is ₹ 15 and that for a box is ₹ 20. How many of the jars and boxes should the person purchase so as to minimise the total cost ?

Formulate the above problem as LPP.

4

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

14

1) Solve the following LPP by using simplex method.

Maximise  $Z = 5x + 3y$  subject to

$$3x + 5y \leq 15; 6x + 2y \leq 24; x, y \geq 0.$$



2) Find IBFS of the following T.P. by using Vogel's approximation method.

	W <sub>1</sub>	W <sub>2</sub>	W <sub>3</sub>	W <sub>4</sub>	Capacity
F <sub>1</sub>	190	300	500	100	70
F <sub>2</sub>	700	300	400	600	90
F <sub>3</sub>	400	100	600	200	180
<b>Demand</b>	50	80	70	140	

3) Solve the following A.P. to maximise the total profit.

	J <sub>1</sub>	J <sub>2</sub>	J <sub>3</sub>	J <sub>4</sub>	J <sub>5</sub>
M <sub>1</sub>	32	38	40	28	40
M <sub>2</sub>	40	24	28	21	36
M <sub>3</sub>	41	27	33	30	37
M <sub>4</sub>	22	38	41	36	36
M <sub>5</sub>	29	33	40	35	39

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

14

1) Solve the following A.P. to minimise the total assignment cost.

	A	B	C	D	E
P	2.5	5	1	6	1
Q	2	5	1.5	7	3
R	3	6.5	2	8	3
S	3.5	7	2	9	4.5
T	4	7	3	9	6
U	6	9	5	10	6

2) Solve the following LPP by using graphical method.

Minimise  $z = 4x + 2y$  subject to

$4x + y \geq 20$ ;  $2x + y \geq 14$ ;  $x + 6y \geq 18$ ;  $x, y \geq 0$ .

3) Find IBFS, hence find optimum solution of the following T.P. by using MODI.

	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
O <sub>1</sub>	23	27	16	30 18	30
O <sub>2</sub>	5 12	35 17	20	51	40
O <sub>3</sub>	17 22	28	25 12	11 32	53
<b>Demand</b>	22	35	25	41	123





- 6) If  $\hat{Y} = a$  then \_\_\_\_\_  
a)  $b_{yx} = 0$       b)  $b_{xy} = 0$       c)  $b_{yx} = 1$       d)  $b_{xy} = 1$
- 7) If  $r_{xy} = 0.6$  and  $b_{yx} = 1.2$ , then  $b_{xy} =$  \_\_\_\_\_  
a) 0.3      b) 1      c) 0.6      d) 0.36
- 8) Multiple correlation coefficients is always lies between \_\_\_\_\_  
a)  $-1$  and  $+1$       b)  $0$  and  $1$   
c)  $-1$  and  $0$       d) none of these
- 9) The correlation between two variables after eliminating the linear effect of third variable 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 greater than one year is known as \_\_\_\_\_ variation.  
a) seasonal      b) cyclical      c) random      d) all of these
- 11) The general pattern of increase or decrease in economics or social phenomenon is shown by \_\_\_\_\_  
a) secular trend      b) seasonal variation  
c) cyclical variation      d) irregular variation
- 12) Index numbers are expressed in \_\_\_\_\_  
a) ratios      b) squares  
c) percentages      d) combinations
- 13) The possible relation between Laspeyre's (L), Paasche's (P) and Fisher's (F) index number is \_\_\_\_\_  
a)  $L < P < F$       b)  $L < F < P$       c)  $P < L < F$       d)  $F < L < P$
- 14) Measuring trend by least square method \_\_\_\_\_  
a) provides trend values for all time periods  
b) is useful for predicting future values  
c) a) and b) both  
d) none of these





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

- 1) Define – perfect correlation.
- 2) State phases of cyclical variation.
- 3) State equation of plane of regression  $X_1$  on  $X_2$  and  $X_3$ .
- 4) State normal equations to obtain the constants in second degree curve.
- 5) Given :  $n = 10$ ,  $\sum XY = 511$ , A.M. of X and Y are 12 and 7 respectively. Find  $\text{Cov}(X, Y)$ .
- 6) Given :  $b_{yx} = -0.625$  and  $b_{xy} = -0.875$ . Find  $r_{xy}$
- 7) If the Laspeyre's and Paasche's price index numbers are 125 and 132.5 respectively. Find Fisher's price index number.
- 8) Given :  $\bar{X} = \bar{Y} = 20$ ,  $b_{yx} = 1.5$ ,  $b_{xy} = 0.75$ . Obtain equation of line of regression Y on X.
- 9) Given :  $\sigma_1 = 1$ ,  $\sigma_2 = 2$ ,  $\sigma_3 = 3$ ,  $r_{12} = r_{13} = r_{23} = 0.7$ . Find  $b_{12.3}$ .

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

1) Find Spearman's rank correlation coefficient between X and Y

<b>X</b>	10	14	18	14	22	20	22
<b>Y</b>	5	9	12	12	17	16	16

2) Find price index number for 2007 by weighted aggregate method. Interpret the result.

<b>Price in 2007</b>	25	50	20
<b>Price in 2008</b>	30	40	150
<b>Weight</b>	3	2.5	4.5

3) Given :  $n = 10$ ,  $\sum X = 115$ ,  $\sum Y = 129$ ,  $\sum X^2 = 2150$  and  $\sum XY = 1575$ . Obtain equation of line of regression Y on X.

B) Explain causes of seasonal variation. 4



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

14

- 1) Given :  $\bar{X}_1 = 20$ ,  $\bar{X}_2 = 40$ ,  $\bar{X}_3 = 80$ ,  $\sigma_1 = 8$ ,  $\sigma_2 = 6$ ,  $\sigma_3 = 4$ ,  $r_{12} =$ ,  $r_{13} =$ ,  $r_{23} = 0.7$ . Obtain equation of plane of regression  $X_1$  on  $X_2$  and  $X_3$ , estimate  $X_1$  for  $X_2 = X_3 = 65$ .
- 2) Fit second degree parabola to the following time series and obtain trend value for 2010.

Year	2005	2006	2007	2008	2009
Sale	31	41	55	73	95

- 3) Explain scatter diagram method of studying correlation between two variables.

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

14

- 1) Find Fisher's price and quantity index numbers for the year 2005.

Commodity	2004		2005	
	Price	Quantity	Price	Quantity
A	7	12	10	15
B	22	10	30	12.5
C	30	5.5	25	7

- 2) Find correlation coefficient between X and Y and interpret the result.

X	60	65	61	67	70	64	65
Y	70	72	74	80	71	73	78

- 3) Derive equation of line of regression Y on X by least square principle.

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**B.Sc. (E.C.S.) (Part – I) (Semester – II) (CBCS – Pattern)  
Examination, 2018  
Paper – IX : PROBABILITY THEORY – II**

Day and Date : Monday, 23-4-2018  
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 X and Y are two independent discrete r.v.'s with  $V(X) = 9$  and  $V(2X+3Y) = 72$ , then  $V(Y) =$  \_\_\_\_\_
  - a) 4
  - b) 2
  - c) 16
  - d) None of these
- 2) If the p.d.f. of continuous r.v. X is  $f(x) = 1/2$ , if  $0 < X < 2$ ; then  $E(X) =$  \_\_\_\_\_
  - a) -1
  - b) 0
  - c) 0.5
  - d) 1
- 3) The normal probability curve is \_\_\_\_\_
  - a) Bell Shaped
  - b) Symmetric
  - c) Mesokurtic
  - d) All of these
- 4) For bivariate discrete r.v. (X, Y), if  $P(X = 3/Y = 2) = 0.15$ ,  $P(Y = 2) = 0.5$ , then  $P(X = 3; Y = 2) =$  \_\_\_\_\_
  - a) 0.75
  - b) 0.075
  - c) 1
  - d) None of these
- 5) A r.v. X has normally distributed with mean is 2 and s.d. is 4 then mean of  $Y = 3X + 2$  is \_\_\_\_\_
  - a) 8
  - b) 2
  - c) 6
  - d) None of these
- 6) Let a continuous r.v. X has p.d.f.  $f(x) = c$ , if  $1 < X < 3$ , then value of c is \_\_\_\_\_
  - a) 1
  - b) 0
  - c) 1/2
  - d) -1

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- 7) A r.v.  $x$  has an exponential distribution with mean 4. Then S.D. of distribution is \_\_\_\_\_
- a) 16  
b) 4  
c) 0  
d) 1
- 8) A continuous r.v.  $X$  has uniform distribution over  $[a, b]$ , then c.d.f. of  $X$  is  $F(x) =$  \_\_\_\_\_
- a)  $(a + b)/2$   
b)  $(x - a)/(b - a)$   
c)  $1 - e^{-x\theta}$   
d) None of these
- 9) Rejecting null hypothesis when it is true is \_\_\_\_\_
- a) Correct decision  
b) Type-I error  
c) Type-II error  
d) None of these
- 10) If  $X$  be continuous r.v. with p.d.f.  $f(x)$ , then \_\_\_\_\_
- a)  $P(X = k) = 0$   
b)  $f(x) \geq 0$  for all  $-\infty < x < \infty$   
c)  $\int_{-\infty}^{\infty} f(x) dx = 1$   
d) All of these
- 11) Area of critical region depends on \_\_\_\_\_
- a) Size of type-I error  
b) Size of type-II error  
c) Value of statistics  
d) Number of observations
- 12) If  $X \rightarrow U[4, 16]$ . Then  $V(X) =$  \_\_\_\_\_
- a) 20  
b) 12  
c) 10  
d) 16
- 13) A two dimensional discrete r.v.  $(X, Y)$  has joint p.m.f.  $P(x, y) = k(x+y)/5$ , if  $X = 1, 2, 3$  and  $Y = 2, 4, 6$ , then  $P(X = 4, Y = 1) =$  \_\_\_\_\_
- a)  $k$   
b) 0  
c)  $4k/5$   
d) None of these
- 14) Let  $X$  be a continuous r.v. with p.d.f.  $f(x)$ . Then  $P(X \leq a) =$  \_\_\_\_\_
- a)  $\int_0^{\infty} f(x) dx$   
b)  $\int_{-\infty}^a f(x) dx$   
c)  $\int_{-\infty}^{\infty} f(x) dx$   
d)  $\int_0^a f(x) dx$



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

- 1) If  $X \rightarrow U[a, 10]$  and  $P(3 < X < 7) = 1/2$ . Find value of 'a'.
- 2) Define joint p.m.f. of two dimensional discrete r.v. (X, Y).
- 3) State any two properties of distribution function of continuous r.v. X.
- 4) Let a continuous r.v. X denotes lifetime of an electronic component having average lifetime 180 days. Write p.d.f. of r.v. X.
- 5) If  $X_1, X_2, \dots, X_n$  are independent r.v.'s such that  $X_i \rightarrow N(\mu_i, \sigma_i^2); i = 1, 2, \dots, n$ . If  $Y = (X_1 + X_2 + \dots + X_n)$ , then state distribution of Y.
- 6) If a continuous r.v. X has uniform distributed with mean 1 and variance 4/3. Find parameters of the distribution.
- 7) Define Statistic, Critical region.
- 8) The joint p.m.f. of (X, Y) is  $P(x, y) = (x + y)/18$ , if  $X = 2, 4$  and  $Y = 1, 3$ . Find  $P(X = 4/Y = 3)$ .
- 9) Define null and alternative hypothesis.

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

1) The joint p.m.f. of (X, Y) is  $P(x, y) = k(5x+10y)$ , if  $X = 1, 2, 3$  and  $Y = 0, 2$ . Find value of k and marginal p.m.f. of X and Y.

2) The p.d.f. of r.v. X is  $f(x) = \begin{cases} 12(x^2 - x^3), & \text{if } 0 < X < 1 \\ = 0 & \text{otherwise} \end{cases}$

Find mean and variance of X.

3) Define exponential distribution. State its mean variance and distribution function.

B) State any four properties of normal distribution. 4

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

1) In one day's production of 400 articles only 50 are of top quality, can we assume that 20% of manufactured products are of top quality. Use 5% level of significance.

2) The radius X of a ball-bearing has uniform distribution over the interval [0, 1.5]. Find :

- i)  $P(X > 0.5)$                       ii)  $P(0.3 < X < 1.2)$



- 3) Define the following terms of continuous r.v. X.
- Probability density function (p.d.f.)
  - Mathematical expectation
  - Variance.

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

**14**

- 1) The marks scored by students has normal distribution. Find mean and s.d. of marks if 31% of the students scored marks below 45 and 8% are scored above 64.

(Given : for SNV Z area between 0 and 0.49 is 0.19, area between 0 and 1.4 is 0.42)

- 2) Describe test procedure for testing hypothesis  $H_0 : \mu = \mu_0$  against  $H_1 : \mu \neq \mu_0$ .
- 3) Suppose the life time of a certain make of T.V. tube is exponentially distributed with mean life time 1600 hrs.

Find probability that :

- The tube will work up to 2400 hrs.
  - The tube will survive after 1000 hrs.
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No.Set **P****B.Sc. (ECS) – II (Semester – III) (New CBCS) Examination, 2018**  
**Paper – I : OOP USING C++**Day and Date : Tuesday, 24-4-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. Choose correct alternatives :

14

- 1) \_\_\_\_\_ function reduces function call overhead.  
a) inline                      b) friend                      c) both a) and b)      d) none of these
- 2) \_\_\_\_\_ data of parent class not inherited.  
a) public                      b) private                      c) protected                      d) both a) and b)
- 3) In inheritance destructor is executed in \_\_\_\_\_ order.  
a) base to derive      b) derive to base      c) base to base      d) all of these
- 4) \_\_\_\_\_ wraps data and function together.  
a) abstraction                      b) encapsulation      c) both a) and b)      d) none of these
- 5) \_\_\_\_\_ function can access private data of a class.  
a) member                      b) friend                      c) static member      d) all of these
- 6) \_\_\_\_\_ file opening mode used to read data from file.  
a) ios::out                      b) ios::bin                      c) ios::read                      d) ios::in
- 7) \_\_\_\_\_ class having at least one pure virtual function.  
a) friend                      b) static                      c) abstract                      d) local
- 8) \_\_\_\_\_ operator in C++ can't be overloaded.  
a) .                      b) ::                      c) ? :                      d) all of these
- 9) \_\_\_\_\_ function is not in scope of class body.  
a) friend                      b) member                      c) both a) and b)      d) none of these
- 10) Using \_\_\_\_\_ a compile time polymorphism is achieved.  
a) Function overloading                      b) Virtual function  
c) Both a) and b)                      d) All of these
- 11) It is not possible to combine two or more file opening mode in open () method.  
a) True                      b) False

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- 12) By default members of a class are  
a) protected                      b) private                      c) public                      d) can't say
- 13) \_\_\_\_\_ are memory management operators in C++.  
a) Delete                      b) New                      c) Malloc()                      d) Both a) and b)
- 14) Overloading arithmetic unary operators using friend function, it requires \_\_\_\_\_ arguments.  
a) zero                      b) one                      c) two                      d) none of these
2. Answer **any seven** of the following : **14**
- 1) Explain 'typedef' with syntax.
  - 2) What is inline function ?
  - 3) Write use of scope resolution operator (::) in C++ with syntax.
  - 4) What is Dynamic memory allocation ? How it is achieved in C++ ?
  - 5) What is difference between pointer variable and reference variable ?
  - 6) Explain in short-'Data Abstraction' as OOP's concept.
  - 7) List out characteristics of 'Destructor'.
  - 8) Write use of access specifiers in C++.
  - 9) What is type casting in C++ ?
3. A) Attempt **any two** of the following : **10**
- 1) Write a C++ program to print square of all even numbers between 1 to 20.
  - 2) What is constructor ? List out it's characteristics and explain 'default constructor'.
  - 3) What is inheritance ? Explain it's types with suitable block diagram only.
- B) Explain the concept function with default arguments. **4**
4. Answer **any two** of the followings : **14**
- 1) What is Abstract class ? Explain with suitable example.
  - 2) What is function overloading ? Illustrate function overloading with one example.
  - 3) Write a C++ program to count vowels present in a file.
5. Answer **any two** of the following : **14**
- 1) Write a program in C++ to accept and display rollno, name and percentage of three students by using concept array of object.
  - 2) Explain 'Multiple Inheritance' with example.
  - 3) How we can handle file errors during file manipulations ? Explain with any two file error handling functions.





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**B.Sc. (ECS) – II (Semester – III) (New) (CBCS) Examination, 2018**  
**SOFTWARE ENGINEERING (Paper – II)**

Day and Date : Wednesday, 25-4-2018

Total Marks : 70

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

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

1. Choose correct alternatives : 14

- 1) Changes made to an information system to add the desired but not necessarily the required feature is called \_\_\_\_\_ maintenance.  
A) Preventive      B) Adaptive      C) Corrective      D) Perfective
- 2) In the spiral model 'risk analysis' is performed  
A) In the first loop      B) In the first and second loop  
C) In every loop      D) Before using spiral model
- 3) Each time a defect gets detected and fixed, the reliability of a software product  
A) Increases      B) Decreases  
C) Remains constant      D) All of these
- 4) The testing that focuses on the variables is called \_\_\_\_\_ testing.  
A) Unit      B) White box      C) Acceptance      D) Black box
- 5) \_\_\_\_\_ is the process of gathering and interpreting facts, diagnosing problems and using the information to recommend improvements to the system.  
A) System design      B) System analysis  
C) System study      D) All of these
- 6) Operational outputs are the normal routine reports based on day to day functions or activities.  
A) True      B) False
- 7) \_\_\_\_\_ is a design tool that pictorially shows the relation between modules.  
A) DD      B) DFD      C) HIPO      D) None of these
- 8) Every system has its limits that determine the sphere of influence and control is called as \_\_\_\_\_ of the system.  
A) Subsystem      B) Interface      C) Structure      D) Boundary

P.T.O.





3. A) Attempt **any two** questions from the followings. **10**
- 1) Explain the Incremental approach.
  - 2) Define CASE Tools with its benefits. How the CASE tools are classified ?
  - 3) What is Decision Table ? Draw a Decision Table of following :
- Case study** : Bookstores get a trade discount of 25%; for orders from libraries and individuals, 5% allowed on orders of 6 – 19 copies per book title ; 10% on orders for 20 – 49 copies per book title; 15% on orders for 50 copies or more per book title.
- B) Define software and explain the various characteristics of software. **4**
4. Attempt **any two** questions from the followings. **14**
- 1) Briefly discuss Prototyping. What are the advantages of it and what steps required to build a Prototype ?
  - 2) What is output design ? How many types of outputs can be there ? What are the different formats of output ?
  - 3) Define BCNF. How does it differ from 3NF ? Explain with suitable example.
5. Attempt **any two** questions from the followings. **14**
- 1) Draw DFD and ERD of Inventory system.
  - 2) What is system implementation process ? Explain various system implementation methods with their advantages and disadvantages.
  - 3) What do you mean by Software Testing ? Why it's required ? Also explain different type of testing techniques.
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**B.Sc. (ECS) – II (Semester – III) (CBCS) Examination, 2018**  
**OPERATING SYSTEM (Paper – III) (New)**

Day and Date : Thursday, 26-04-2018

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 correct alternatives :

14

- 1) Which is not the state of process ?  
a) Blocked      b) Ready      c) Running      d) Privilege
- 2) Round Robin Scheduling is essentially the preemptive version of  
a) FIFO      b) SJF  
c) Shortest remaining      d) Longest Time First
- 3) Size of virtual memory depends upon  
a) Memory bus      b) Address bus  
c) Size of memory      d) Memory buffer register
- 4) FIFO Scheduling is  
a) Non Preemptive Scheduling      b) Dead Line Scheduling  
c) Preemptive Scheduling      d) None of these
- 5) \_\_\_\_\_ is not application of software.  
a) Word processing      b) Spread Sheet  
c) DTP      d) Linux
- 6) An operating system manages  
a) Memory      b) Processor  
c) Disk and I/O device      d) All of above
- 7) \_\_\_\_\_ is also known as 'Roll out' and 'Roll in'.  
a) Process      b) Swapping  
c) Both a) and b)      d) None



- 8) \_\_\_\_\_ file are saved with .bat extension.
- a) Batch file
  - b) Master file
  - c) Both a) and b)
  - d) None
- 9) Deadlock in an O.S. is
- a) Definite waiting process
  - b) Desirable process
  - c) Undesirable process
  - d) All of these
- 10) Simplest way to break a deadlock is
- a) Kill one process
  - b) Roll back
  - c) Preempt a resource
  - d) All of above
- 11) The Bankers algorithm is used to deadlock avoidance
- a) True
  - b) False
- 12) File type can be represented by
- a) File name
  - b) File identifier
  - c) File extension
  - d) None of these
- 13) In a segmentation scheme the logical memory will be divided into
- a) Pages
  - b) Frames
  - c) Blocks
  - d) Segments
- 14) Process priorities are stored in PCBs
- a) True
  - b) False
2. Answer the following (**any 7**) :

**14**

- 1) Define Operating System.
- 2) Define Process.
- 3) What is Page Fault ?
- 4) What is System Call ?
- 5) What is BAT ?
- 6) What is directory ?
- 7) What is PCB ?
- 8) What is swapping ?
- 9) What is deadlock ?



3. A) Answer the following (**any 2**) : 10
- 1) Write a critical section problem in detail.
  - 2) Discuss different operations performed on files.
  - 3) Define process. Explain implicit and explicit process.

B) Write a note on multiprogramming. 4

4. Answer the following (**any 2**) : 14
- 1) Write any 2 page replacement algorithm with example.
  - 2) Explain in detail program threads.
  - 3) State and explain various directory structure.

5. Answer the following (**any 2**) : 14
- 1) Solve the following problem using SJF algorithm.

Process	Burst time in millisecond
P1	6
P2	8
P3	7
P4	3

Perform the following operations

- a) Draw Gantt chart for the schemes.
  - b) Calculate waiting for each process.
  - c) Calculate average waiting time.
- 2) What is memory management ? Explain swapping in memory management.
- 3) What is meant by scheduling ? Write the scheduling criteria considered for scheduling process.
-



SLR-SC – 25

Seat No.	
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Set **P**

**B.Sc. (ECS) – II (Semester – III) (New CBCS) Examination, 2018**  
**Paper – IV : DATA STRUCTURES**

Day and Date : Friday, 27-4-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. Choose correct alternatives : **14**
- 1) \_\_\_\_\_ is non-linear data structure.  
a) Array                      b) Stack                      c) Queue                      d) None of these
  - 2) If first node of linked list is 'NULL' then it has \_\_\_\_\_ nodes.  
a) One                      b) Two                      c) Three                      d) Zero
  - 3) Attempting to remove element from empty queue results in  
a) Overflow                      b) Underflow                      c) Both a) and b)                      d) None of these
  - 4) In which algorithm a main problem is breakdown into two or more sub-problems ?  
a) Branch and bound                      b) Greedy  
c) Divide and conquer                      d) None of these
  - 5) Which of the following is an application of queue ?  
a) Reversal of string  
b) Evaluation of Postfix expression  
c) CPU scheduling  
d) Matching parenthesis in an expression
  - 6) After traversing binary tree in post order, the root is found at \_\_\_\_\_ position.  
a) First                      b) Middle                      c) Last                      d) Second last
  - 7) How many possible binary trees can be constructed using 5 nodes ?  
a) 42                      b) 24                      c) 55                      d) 65

P.T.O.



- 8) \_\_\_\_\_ sort method uses divide and conquer strategy.  
a) Bubble                      b) Selection                      c) Insertion                      d) Merge
- 9) The balance factor of each node of AVL tree is in the range  
a) 1,2,3                      b) 0,1,2                      c) -1, 0, 1                      d) Both a) and b)
- 10) \_\_\_\_\_ multiway search tree allows random as well as sequential access of keys.  
a) B-tree                      b) B+tree                      c) Threaded                      d) Extended
- 11) In case of \_\_\_\_\_ queue, elements are inserted and removed from both ends.  
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 over sorted data only.  
a) Linear                      b) Binary                      c) Both a) and b)                      d) None of these
- 14) Which of the following sorting method uses queue data structure for implementation ?  
a) Bubble                      b) Selection                      c) Insertion                      d) Radix

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

**14**

- 1) Write difference between stack and queue.
- 2) What is "Stack overflow" ? When it occurs ?
- 3) Write node structure for doubly linked list.
- 4) List out applications of queue data structure.
- 5) What is data structure ? Write its importance.
- 6) What is collision in hashing ?
- 7) What is complete binary tree ?
- 8) What is the advantage of circular queue over linear queue ?
- 9) How dynamic memory allocation is better than static memory allocation ?





3. A) Attempt **any two** of the followings : 10
- 1) Implement function that counts and display leaf nodes of binary tree.
  - 2) Write an algorithm that evaluates postfix expression using stack.
  - 3) Explain 'Heap sort' method with example.
- B) Explain ADT for queue data structure. 4
4. Answer **any two** of the followings : 14
- 1) Write a program to implement binary search method.
  - 2) What is traversal ? Explain all tree traversal methods with example.
  - 3) What is circular linked list ? Explain following operations of singly circular linked.
    - a) insert\_last()
    - b) remove\_after()
    - c) count()
5. Answer **any two** of the followings : 14
- 1) Write a program that counts total number of vowels present in string using stack.
  - 2) Explain node delete operation of binary search tree with following cases :
    - a) Deleting leaf node
    - b) Deleting node having one child
    - c) Deleting node having two children.
  - 3) What is B-tree ? Write its characteristics and construct B- tree of order Three for following data :

43	23	61	41	54	69	15	35	28	91	68	80	30	98	100	138	125	65	110	62
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**B.Sc. (ECS) – II (Semester – III) (CBCS Pattern) Examination, 2018  
EMBEDDED SYSTEM – I (New) (Paper – V)**

Day and Date : Saturday, 28-4-2018

Total 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 and write a correct alternative answer from given alternative. **14**
- 1) 8051 microcontroller has \_\_\_\_\_ byte of data memory (RAM).  
a) 128 byte      b) 256 byte      c) 64 byte      d) 1 kb
  - 2) The ARM has \_\_\_\_\_ bus architectures.  
a) Address bus    b) Port bus      c) AMBA bus      d) None of these
  - 3) SPI stands for  
a) Serial Peripheral Interface      b) Serial and Parallel Interface  
c) Synchronous Peripheral Interface    d) None of these
  - 4) The data is read from the pipe in \_\_\_\_\_ order.  
a) FIFO      b) FILO      c) LIFO      d) All of these
  - 5) \_\_\_\_\_ type of RAM is designed by using flip-flop.  
a) Static      b) Dynamic      c) Virtual      d) Both a and b
  - 6) \_\_\_\_\_ are the type of semaphore.  
a) Binary      b) Counting      c) Both a and b      d) None of these
  - 7) In LCD interfacing \_\_\_\_\_ pin are used for data read write operation.  
a) R/W      b) E      c) RS      d) VCC
  - 8) The embedded system is designed by using \_\_\_\_\_ type of device.  
a) Microprocessor      b) Microcontroller  
c) D.S.P.      d) All of these



- 9) In \_\_\_\_\_ type of communication the data can transfer and receive with same clock frequency.
- a) Serial synchronous communication
  - b) Serial asynchronous communication
  - c) Serial communication
  - d) Parallel communication
- 10) Kernel is the \_\_\_\_\_ of the operating system.
- a) Heart
  - b) Brain
  - c) Both a and b
  - d) None of these
- 11) 8086 microprocessor has \_\_\_\_\_ bit processor.
- a) 8 bit
  - b) 16 bit
  - c) 32 bit
  - d) 64 bit
- 12) \_\_\_\_\_ type of timer used to automatic restart or reboot the system.
- a) Timer 0
  - b) Timer 1
  - c) Watchdog timer
  - d) None of these
- 13) C programme are converted into machine level language by using
- a) Compiler
  - b) Interpreter
  - c) Operating system
  - d) None of these
- 14) ARM has \_\_\_\_\_ type of controller.
- a) RISC
  - b) CISC
  - c) Both a and b
  - d) None of these

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

**14**

- 1) Define embedded system.
- 2) What is RISC ?
- 3) What is scheduler ?
- 4) Draw the block diagram of embedded system.
- 5) Which are the interfacing techniques ?
- 6) Define I<sup>2</sup>C bus.
- 7) Write any two features of embedded system.
- 8) Which are the different types of semiconductor memories ?
- 9) Give the types of I/O Ports.

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3. A) Attempt **any two** of the following : **10**
- 1) Explain the designing challenges in the embedded system.
  - 2) Write a note on flash memory.
  - 3) Give the different applications of embedded system.
- B) Give the features of 8051 microcontroller. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain ARM architecture with block diagram.
  - 2) Write a note on multitasking and multiprocessing.
  - 3) Explain in detail serial and parallel communication protocols (any four).
5. Attempt **any two** of the following : **14**
- 1) Explain in detail the interfacing of LCD (16\*2) display with 8051 microcontroller.
  - 2) Write a note on Memory Mapping.
  - 3) Explain wireless communication devices.
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**B.Sc. (ECS) II (Semester – III) (CBCS) Examination, 2018  
ADVANCED MICROPROCESSOR (Paper – VI) (New)**

Day and Date : Wednesday, 2-5-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

1. Multiple Choice Questions :

14

- 1) Cache is \_\_\_\_\_ memory.
  - a) Low speed
  - b) High speed
  - c) Moderate
  - d) None
- 2) Read only memory is
  - a) Volatile
  - b) Non volatile
  - c) Temporary
  - d) None of these
- 3) The IC 8089 is
  - a) DMA
  - b) Memory
  - c) IOP
  - d) Interface
- 4) In general register organization control word is \_\_\_\_\_ bit.
  - a) 14
  - b) 8
  - c) 6
  - d) 16
- 5) The memory chip of 12 bit address line have capacity
  - a) 1 KB
  - b) 4 KB
  - c) 16 KB
  - d) 8 KB
- 6) In daisy chain devices are connected to CPU in
  - a) Parallel
  - b) Serial
  - c) Both a) and b)
  - d) None of these
- 7) \_\_\_\_\_ instruction have implied addressing mode.
  - a) MOV
  - b) ADD
  - c) RAR
  - d) LXI
- 8) CAM is \_\_\_\_\_ memory.
  - a) Associative
  - b) Cache
  - c) Virtual
  - d) Real



- 9) Static RAM consist
- a) Capacitor
  - b) F/F
  - c) Resistor
  - d) None of these
- 10) \_\_\_\_\_ is logical group of instruction.
- a) MOV
  - b) XOR
  - c) ADD
  - d) POP
- 11) Unit of memory is
- a) Ohm
  - b) GB
  - c) kHz
  - d) None of these
- 12) In CPU \_\_\_\_\_ register shows address of next instruction.
- a) HL
  - b) Acc
  - c) PC
  - d) SP
- 13) Memory mapped I/O uses \_\_\_\_\_ control lines.
- a) Common
  - b) Separate
  - c) Same
  - d) None
- 14) In \_\_\_\_\_ modes of data transfer CPU is main incharge.
- a) DMA
  - b) Programmed I/O
  - c) Interrupt driven
  - d) None

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

**14**

- 1) What is stack ?
- 2) Explain Hit and Miss in cache.
- 3) Draw instruction format.
- 4) Explain serial communication.
- 5) Explain data transfer instruction.
- 6) List types of memory.
- 7) Compare I/O mapped I/O and memory mapped I/O.
- 8) Define polish notation.
- 9) Draw combinational ALU.



3. A) Answer **any two** of the following : **10**
- 1) Explain parallel priority interrupt.
  - 2) Define mapping. Explain direct mapping in detail.
  - 3) Explain delay element method.
- B) Explain characteristics of memory. **4**
4. Answer **any two** of the following : **14**
- 1) Explain stack organization based CPU.
  - 2) Explain DMA transfer.
  - 3) Explain types of instruction format.
5. Answer **any two** of the following : **14**
- 1) Define addressing mode and explain their types.
  - 2) What is memory hierarchy ? Explain their types.
  - 3) Write a note on virtual memory.
-



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**B.Sc. (ECS) – II (Semester – III) (Old) Examination, 2018  
(Paper – I) OPERATING SYSTEM (CGPA)**

Day and Date : Tuesday, 24-4-2018  
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 alternative.

14

- 1) \_\_\_\_\_ system guarantees that the critical tasks will be completed on time.
  - a) Time sharing
  - b) Hard real time
  - c) Soft real time
  - d) Parellel
- 2) Process is
  - a) A program in execution
  - b) An instance of a program running on a computer
  - c) The entity that can be assigned to and executed
  - d) All of these
- 3) The DOS command acts as an interface between
  - a) User and CPU
  - b) CPU and storage device
  - c) CPU and I/O device
  - d) Two different processes
- 4) \_\_\_\_\_ is to have a process running at all times.
  - a) Multitasking
  - b) Multiprocessing
  - c) Multiprogramming
  - d) Timesharing
- 5) Windows 2000 schedules threads using priority based \_\_\_\_\_ scheduling algorithm.
  - a) queuing
  - b) preemptive
  - c) non preemptive
  - d) priority







- 3) Explain Distributed System.
  - 4) Explain Critical Section problem.
  - 5) What is context switch ?
  - 6) What is CPU burst and IO burst ?
  - 7) Define operating system.
  - 8) Explain inter-process communication.
  - 9) What is Starvation ?
3. A) Solve **any two**. 10
- 1) Explain Synchronization.
  - 2) Explain the concept of virtual machine.
  - 3) Explain structure of PCB.
- B) What are the different types of services provided by an O.S. ? 4
4. Solve **any two**. 14
- 1) Explain priority scheduling algorithm with an example.
  - 2) Write any two algorithms for solving Critical Section problem.
  - 3) What is System call ? Explain various categories of System Call.
5. Solve **any two**. 14
- 1) What is Scheduler ? Explain different types of schedulers in detail.
  - 2) Write a note on semaphores.
  - 3) Explain Process Creation and Process termination in detail.
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SLR-SC – 29

Seat No.	
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**B.Sc. (ECS) – II (Semester – III) Examination, 2018  
(CGPA Pattern) (Old)  
Paper – II : OOP USING C++ – I**

Day and Date : Wednesday, 25-4-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. a) Select the correct alternatives : 10
- 1) By default return type of main ( ) in C++ is \_\_\_\_\_
    - a) int
    - b) void
    - c) float
    - d) none
  - 2) The binding of data and functions into a single unit is called as \_\_\_\_\_
    - a) class
    - b) dynamic binding
    - c) encapsulation
    - d) inheritance
  - 3) The '<<' operator in output statements is called a \_\_\_\_\_
    - a) insertion operator
    - b) extraction operator
    - c) get-from operator
    - d) bit-wise operator
  - 4) From the following list which operator is not overloaded ?
    - a) Conditional
    - b) Extraction
    - c) Increment
    - d) Addition
  - 5) Elements of structure are by default \_\_\_\_\_
    - a) Private
    - b) Public
    - c) Protected
    - d) None
  - 6) The developer of C++ language is \_\_\_\_\_
    - a) Dennis Ritchie
    - b) Ken Thompson
    - c) Bjarne Stroustrup
    - d) Richards

P.T.O.



- 7) From the following which function is used to initialize the variable
- a) inline
  - b) destructor
  - c) constructor
  - d) friend
- 8) \_\_\_\_\_ is a combination of operators, constants and variables arranged as per the rules of language.
- a) Expression
  - b) Constant
  - c) Statement
  - d) None
- 9) Destructor is prefix with a \_\_\_\_\_ character.
- a) colon
  - b) semicolon
  - c) tilde
  - d) none
- 10) The members declared in the \_\_\_\_\_ section can be accessed by any function from the outside world.
- a) Private
  - b) Protected
  - c) Public
  - d) None

b) State **True** or **False** :

4

- 1) OOP language permit reusability of the existing code.
- 2) Every statement in C++ program is terminated by a semicolon.
- 3) Static function can use non-static members.
- 4) Constructors can not be overloaded.

2. Write the answer of the following questions (**any 7**) :

14

- a) List at least four new operators added by C++.
- b) Define local class with example.
- c) What is constant object ?
- d) List out new keywords added by C++.
- e) What is the need of static data ?
- f) Why is it necessary to include the file iostream in all our program ?
- g) Define memory management operators.
- h) List few areas of applications of OOP technology.
- i) What is function prototype ?



3. A) Write the answer of the following questions (**any two**) : **10**
- a) Explain array of objects with example.
  - b) What is constructor ? List some of the special properties of the constructor function.
  - c) Explain with example function returning objects.
- B) When a friend function compulsory ? Give an example. **4**
4. Write the answer of the following questions (**any two**) : **14**
- a) Explain the control structures in C++.
  - b) Write a program to overload unary ( – ) minus operator.
  - c) What is reference variable ? What is its major use ?
5. Write the answer of the following questions (**any two**) : **14**
- a) When will you make the function inline ? Why ?
  - b) What is operator overloading ? State the rules for operator overloading.
  - c) Write a program to display strong numbers between 1 to 500.
- Strong number :  $145 = 1! + 4! + 5!$
- $= 1 + 24 + 120$
- $= 145.$
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**B.Sc. (ECS) – II (Semester – III) (Old CGPA) Examination, 2018**  
**DATA STRUCTURE AND ALGORITHM (Paper No. – III)**

Day and Date : Thursday, 26-4-2018  
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. A) Choose correct alternatives : **10**
- 1) In \_\_\_\_\_ priority queue, smallest element has maximum priority.  
a) Ascending    b) Descending    c) Both a) and b)    d) None of these
  - 2) The postfix form of the expression  $(A + B)/C$  is  
a)  $AB+/C$     b)  $AB + C/$     c)  $ABC+/$     d)  $+AB/C$
  - 3) Which of the following statement(s) about stack data structure is/are NOT correct ?  
a) Stack data structure can be implemented using linked list  
b) New node can only be added at the top of the stack  
c) Stack is FIFO data structure  
d) The last node at the bottom of the stack has a NULL link
  - 4) Which of the following data structure is linear data structure ?  
a) Tree    b) Graphs    c) Array    d) None of these
  - 5) Queue overflow condition occurs while performing \_\_\_\_\_ operation.  
a) Remove    b) Insert    c) Is empty    d) None of these
  - 6) Which of the following data structure is needed to implement recursion ?  
a) Queue    b) Stack    c) Array    d) List
  - 7) A linear list of elements in which deletion can be done from one end and insertion can be take place only at other end is known as a  
a) Stack    b) Queue    c) Linked list    d) None of these
  - 8) Attempt to pop an element from empty stack is known as  
a) Overloading    b) Underflow    c) Overflow    d) None of these
  - 9) In case of circular linked list, 'NULL' pointer of last node is replaced by address of \_\_\_\_\_ node.  
a) Last    b) Second last    c) Middle    d) First
  - 10) A variant of linked list in which last node of the list points to the first node of the list is  
a) Singly linked list    b) Circular linked list  
c) Multiply linked list    d) Doubly linked list



- B) State **true** or **false**. 4
- 1) The smallest element of an array's index is called its lower bound.
  - 2) Only top element can be accessed in stack.
  - 3) In doubly linked lists, traversal can be performed in reverse direction.
  - 4) In linear queue when  $\text{front} = \text{max} - 1$  then queue is empty.
2. Answer **any seven** of the following : 14
- 1) Define time complexity.
  - 2) Define space complexity.
  - 3) What is dequeue ?
  - 4) List out applications of stack.
  - 5) What is array ? List out types of array.
  - 6) Explain advantages of circular queue.
  - 7) Define node structure of singly linked list.
  - 8) Convert given infix expression to prefix  $A * B + C/D$ .
3. A) Answer **any two** of the following : 10
- 1) Write an algorithm to convert infix expression into postfix expression.
  - 2) Write a program to find the largest element of array.
  - 3) Write function `pop()` and `push()` using array.
- B) Write a program to reverse the string by using stack. 4
4. Answer **any two** of the following : 14
- 1) What is circular linked list ? Explain 'search' operation of doubly circular linked list.
  - 2) Explain use of stack in recursion.
  - 3) Explain polynomial arithmetic with linked list.
5. Answer **any two** of the following : 14
- 1) Write a program to implement queue by following operations :  
a) Insert                      b) Remove                      c) Display
  - 2) Write short note on :  
a) Circular queue              b) Priority queue
  - 3) Write a following operations for linear linked list.  
a) Insert at begin              b) Insert at end              c) Delete first
-



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**B.Sc. (ECS) – II (Semester – III) (CGPA) Examination, 2018  
SOFTWARE ENGINEERING – I (Old) (Paper – IV)**

Day and Date : Friday, 27-4-2018  
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) Economical theory is example of \_\_\_\_\_ system.  
a) TPS                      b) Natural                      c) Open                      d) Conceptual
- 2) Unprocessed fact is called \_\_\_\_\_  
a) Information              b) Data                      c) Item                      d) None of the above
- 3) Which model is also called as the classic life cycle or the waterfall model ?  
a) Iterative Development                      b) Linear Sequence Development  
c) RAD model                      d) Incremental Development
- 4) Training given to the user in the system development is \_\_\_\_\_ feasibility.  
a) Technical              b) Operational              c) Economical              d) All of these
- 5) Requirements can be refined using \_\_\_\_\_  
a) Prototyping model                      b) Waterfall model  
c) Evolutionary model                      d) Spiral model
- 6) Design phase will usually be \_\_\_\_\_  
a) Top-down              b) Bottom-up              c) Random                      d) Center fingering
- 7) During software development which factor is most crucial ?  
a) Process                      b) People                      c) Product                      d) Project
- 8) Air condition system is example of \_\_\_\_\_ system.  
a) Conceptual                      b) Deterministic  
c) Artificial                      d) None of these





- 9) If information is not collected from multiple people or individual then from the fact finding methods \_\_\_\_\_ method is used.
- a) Record review                      b) Observation  
c) Interview                              d) None of these
- 10) \_\_\_\_\_ provides very valuable information related with the system.
- a) Communication                      b) Observation  
c) Record review                      d) All of these
- 11) \_\_\_\_\_ is not role of system analyst.
- a) Salesman                              b) An architect  
c) An agent of change                d) Programmer
- 12) If software can run in different environment then it is said to be \_\_\_\_\_
- a) Reusable      b) Portable      c) Usable      d) Flexible
- 13) Which of the following is not a fact-finding technique ?
- a) Record reviews                      b) Interview  
c) Questionnaire                      d) Third party enquiry
- 14) Which is the system element ?
- a) Input                      b) Process      c) Output      d) All of these

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

**14**

- 1) Define software engineering. State its primary goals.
- 2) What is meant by report ?
- 3) What are the benefits of software prototyping ?
- 4) List out six stages of SDLC.
- 5) What is feedback ?
- 6) What is requirement investigation ?
- 7) Explain TPS.
- 8) Distinguish between deterministic and probabilistic system.
- 9) What is elements of system ?



3. A) Answer the following **(any 2)** : **10**
- 1) Explain feasibility study with its types.
  - 2) What are the general activities in the requirement analysis ?
  - 3) Explain HIPO chart with example.
- B) Write short note on observation. **4**
4. Answer the following **(any 2)** : **14**
- 1) Discuss system analyst as a change agent an organizer, an architect, an intelligent sales person.
  - 2) Discuss between system analysis and system design.
  - 3) What is meant by interview ? Explain types of interview.
5. Answer the following **(any 2)** : **14**
- 1) Explain various symbols used in system and program flowcharts with one example.
  - 2) Explain spiral model with diagram.
  - 3) What is software ? Explain different qualities of software.
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**B.Sc. (ECS) – II (Semester – III) Examination, 2018**  
**(CGPA Pattern Old)**  
**ORGANIZATION OF PC – Paper – V**

Day and Date : Saturday, 28-4-2018  
Time : 2.30 p.m. to 5.00 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. Choose correct alternatives and rewrite.

14

- 1) \_\_\_\_\_ is a impact printer.  
a) Dot matrix      b) Ink jet      c) Laser      d) Thermal
- 2) Accumulator stores \_\_\_\_\_ result.  
a) next      b) current      c) previous      d) none of these
- 3) In \_\_\_\_\_ mode CPU is controller for data transfer.  
a) Programmed      b) DMA  
c) Direct      d) None of these
- 4) IAC stores address of \_\_\_\_\_ instruction.  
a) previous      b) current      c) next      d) starting
- 5) DRAM uses \_\_\_\_\_ to store information.  
a) flip-flop      b) resistor      c) inductor      d) capacitor
- 6) In second generation of computer \_\_\_\_\_ is used.  
a) Transistor      b) Vacuum tube      c) LSI IC      d) VLSI IC
- 7) In OG motherboard \_\_\_\_\_ IC is used as DMA.  
a) 8253      b) 8255      c) 8257      d) 8259
- 8) Control error is \_\_\_\_\_ type interrupt.  
a) Hardware      b) SMI      c) I/O      d) Data transfer
- 9) CD-ROM uses \_\_\_\_\_ in read write mechanism.  
a) Electron      b) Laser      c) LDR      d) Diode
- 10) For PCAT real memory is  
a) 16 MB      b) 16 GB      c) 16 KB      d) 64 MB
- 11) Drum printer \_\_\_\_\_ type printer.  
a) character      b) line      c) page      d) none of these



- 12) \_\_\_\_\_ motor is used to move read write head.  
 a) DC   b) AC  
 c) Spindle   d) Stepper
- 13) The physical memory of 8086 is  
 a) 1 MB                         b) 16 MB                     c) 16 GB                     d) 16 KB
- 14) For OG system DMA uses \_\_\_\_\_ no. of channels.  
 a) 16                             b) 8                             c) 4                             d) 20

2. Answer **any seven** of the following. 14
- 1) Explain multitasking operating system.
  - 2) Explain sheet fed scanner.
  - 3) Explain mechanical switch of keyboard.
  - 4) Explain concept of cache memory.
  - 5) Explain OG machine concept.
  - 6) Explain optical mouse.
  - 7) Explain two level memory hierarchy.
  - 8) Explain BIOS.
  - 9) Write function of modem.
3. A) Answer **any two** of the following. 10
- 1) Explain MFM recording technique.
  - 2) Explain advanced PC's.
  - 3) Explain interrupt map for OG machine.
- B) Explain parity check system for error detection. 4
4. Attempt **any two** of the following. 14
- 1) Explain magnetic disk drive mechanism with block diagram.
  - 2) Explain data transfer mode in detail.
  - 3) Explain OG and NG machine concept.
5. Attempt **any two** of the following. 14
- 1) Explain block concept of CPU.
  - 2) Explain CRT monitors with block diagram.
  - 3) Explain motherboard architecture of OG system.
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**B.Sc. (ECS) – II (Semester – III) (Old CGPA) Examination, 2018  
MICROPROCESSOR – I (Paper – VI)**

Day and Date : Wednesday, 02-05-2018  
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) In \_\_\_\_\_ mode communication done in one direction only.
  - a) Half duplex
  - b) Full duplex
  - c) Simplex
  - d) None of these
- 2) What is RISC ?
  - a) Reduced Instruction Set Computer
  - b) Reversed Instruction Set Computer
  - c) Reduced Instruction Status Computer
  - d) None of above
- 3) In miss the data is not found in
  - a) Cache Memory
  - b) RAM
  - c) Hard Disk
  - d) None of these
- 4) In Immediate Addressing Mode data is present at
  - a) Source
  - b) Destination
  - c) Both
  - d) None of these
- 5) \_\_\_\_\_ is specialized IC which takes care of I/O operation in processor.
  - a) 8085
  - b) 8087
  - c) 8089
  - d) None of these
- 6) \_\_\_\_\_ addressing mode generally used zero byte instructions.
  - a) Implicit
  - b) Register
  - c) Direct
  - d) Immediate



- 7) \_\_\_\_\_ is a register which stores the address of next instruction which is to be executed next.
- a) Stack pointer                                      b) Program counter  
c) General purpose                                      d) None of these
- 8) \_\_\_\_\_ is a area where instruction can be prefetched from memory and stored here.
- a) Stack                      b) Accumulator    c) Queue                      d) None of these
- 9) \_\_\_\_\_ instruction are used to add the data into the stack.
- a) MOV                      b) ADD                      c) PUSH                      d) POP
- 10) \_\_\_\_\_ bus in microprocessor is always unidirectional.
- a) Data bus    b) Control bus  
c) Address bus    d) None of these
- 11) \_\_\_\_\_ is one priority method used in processor.
- a) Polling    b) Requesting  
c) Rolling    d) None of these
- 12) \_\_\_\_\_ unit in microprocessor performs arithmetic and logic operation.
- a) ALU    b) Control Unit  
c) Memory Unit    d) None of these
- 13) \_\_\_\_\_ instruction is used to copy data from one register to another register.
- a) COPY                      b) MOV                      c) ADD                      d) SHIFT
- 14) Cache is \_\_\_\_\_ memory introduced between CPU and main memory.
- a) Low speed    b) High speed  
c) Moderate speed    d) a) and b) both

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

**14**

- 1) What is direct memory access ?
- 2) Draw block diagram of general register organization.
- 3) What is stack ? Explain in brief.
- 4) Write memory hierarchy in PC system.



- 5) What is priority interrupt controller ?
  - 6) Draw diagram of bit slice processor.
  - 7) What is serial communication ?
  - 8) Explain any two instructions with example.
  - 9) What is Hit and Miss in cache memory ?
3. A) Answer **any two** of the following : **10**
- 1) Explain types of instruction format.
  - 2) Explain segmentation with neat diagram.
  - 3) Explain input output processor.
- B) Write short note on ALU. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain stack organization with neat diagram.
  - 2) Explain modes of data transfer in short.
  - 3) Explain I/O mapped I/O and Memory Mapped I/O.
5. Attempt **any two** of the following : **14**
- 1) Explain types of addressing modes in microprocessor.
  - 2) Explain associative memory with there types.
  - 3) Write short note on virtual memory management and explain paging concept.
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**B.Sc. (E.C.S.) – II (Semester – IV) (New CBCS) Examination, 2018  
OBJECT ORIENTED PROGRAMMING USING JAVA (Paper – I)**

Day and Date : Thursday, 3-5-2018  
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.**

1. A) Choose correct alternatives : **10**
- 1) In which the access modifier means that the field can be accessed by all classes in your application ?
    - a) private
    - b) public
    - c) package
    - d) protected
  - 2) Which is a non-static method having the same name as its class ?
    - a) Field
    - b) Method
    - c) Constructor
    - d) None of the above
  - 3) Which class cannot be instantiated ?
    - a) Abstract class
    - b) Static class
    - c) Both a) and b)
    - d) None of the above
  - 4) Which block contains a block of program statements where an exception might occur ?
    - a) catch
    - b) try
    - c) throw
    - d) final
  - 5) Which method is used in thread class to start the execution of the thread ?
    - a) start()
    - b) run()
    - c) stop()
    - d) suspend()
  - 6) Which type of inheritance one super-class has more than one sub-class ?
    - a) hierarchical inheritance
    - b) single inheritance
    - c) multiple inheritances
    - d) multilevel inheritance

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- 7) Which stream does Java application uses to read data from a source, it may be a file, an array, peripheral device or socket ?
- a) InputStream    b) OutputStream  
c) Input / OutputStream                                  d) None of these
- 8) Which operator is used by Java run time implementations to free the memory of an object when it is no longer needed ?
- a) delete    b) free  
c) new    d) none of these
- 9) Which package provides many event classes and Listener interfaces for event handling ?
- a) java.awt    b) java.awt.Graphics  
c) java.awt.event    d) none of these
- 10) Which of these classes is not part of Java's collection framework ?
- a) Maps    b) Array  
c) Stack    d) Queue

B) State the following statement **true/false** :

4

- 1) The ActionListener interface is not used for handling action events.
- 2) Static fields belong to the class, not instances of the class.
- 3) Void is not a wrapper class.
- 4) Swing is not a part of JFC (Java Foundation Classes) that is used to create GUI application.

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

14

- 1) Define Java Virtual Machine (JVM).
- 2) Define method overloading.
- 3) Define final class.
- 4) What is an exception ?
- 5) Write Applet Tag.
- 6) What is Garbage collection ?
- 7) Define Adapter class.
- 8) What is Data Abstraction ?
- 9) Define Vector class.



3. A) Answer **any two** of the following : **10**
- 1) Explain visibility controls in detail.
  - 2) Explain wrapper classes in detail.
  - 3) Explain Byte Stream Classes in detail.
- B) Write a difference between Java and C++. **4**
4. Answer **any two** of the following : **14**
- 1) What is constructor ? Explain with suitable example.
  - 2) Write a multithreading program to implement runnable interface.
  - 3) Write a program to implement method overriding.
5. Answer **any two** of the following : **14**
- 1) What is inheritance ? Explain interface in detail.
  - 2) Explain event handling mechanism in detail.
  - 3) Explain layout manager with its type.
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**B.Sc. (Entire Computer Science) – II (Semester – IV) Examination, 2018  
(New) (CBCS Pattern)  
DBMS Using Oracle (Paper – II)**

Day and Date : Friday, 4-5-2018

Max. Marks : 70

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

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

1. Select the correct alternatives. 14

- 1) Key to represent relationship between tables is called
  - A) Primary key
  - B) Secondary Key
  - C) Foreign Key
  - D) None of these
- 2) In a relational model, relations are termed as
  - A) Tuples
  - B) Attributes
  - C) Tables
  - D) Rows
- 3) Redundant information in a database can result in
  - A) Space wastage
  - B) Integrity violation
  - C) Assertion disturbance
  - D) Null pointers
- 4) Count function in SQL returns the number of
  - A) values
  - B) distinct values
  - C) groups
  - D) columns
- 5) The full form of DDL is
  - A) Dynamic Data Language
  - B) Detailed Data Language
  - C) Data Definition Language
  - D) Data Derivation Language
- 6) Which of the following is a comparison operator in SQL ?
  - A) =
  - B) LIKE
  - C) BETWEEN
  - D) All of the above
- 7) The \_\_\_\_\_ operator is used to compare a value to a list of literals values that have been specified.
  - A) BETWEEN
  - B) ANY
  - C) IN
  - D) ALL



- 8) The statement in SQL which allows to change the definition of a table is  
A) Alter                      B) Update                      C) Create                      D) Select
- 9) A \_\_\_\_\_ is a special kind of a store procedure that executes in response to certain action on the table like insertion, deletion or updation of data.  
A) Procedures                      B) Triggers  
C) Functions                      D) None of the mentioned
- 10) Architecture of the database can be viewed as  
A) two levels                      B) four levels  
C) three levels                      D) one level
- 11) What are the ways of dealing with deadlock ?  
A) Deadlock prevention                      B) Deadlock recovery  
C) Deadlock detection                      D) All of the mentioned
- 12) DBMS helps achieve  
A) Data independence                      B) Centralized control of data  
C) Neither (A) nor (B)                      D) Both (A) and (B)
- 13) DML is provided for \_\_\_\_\_  
A) Description of logical structure of database  
B) Addition of new structures in the database system  
C) Manipulation and processing of database  
D) Definition of physical structure of database system.
- 14) The term attribute refers to a \_\_\_\_\_ of a table.  
A) Record                      B) Column                      C) Tuple                      D) Key
2. Solve **any seven** of the following :
- 1) Define Database and DBMS.
  - 2) Give an example of foreign key.
  - 3) What do you mean by data redundancy ?
  - 4) Who is a DBA ? What are the responsibilities of a DBA ?

14

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- 5) What is the difference between physical data independence and logical data independence ?
  - 6) Why is concurrency control needed ?
  - 7) What is a database trigger ? Which are the different kinds of triggers ?
  - 8) What is a transaction ?
  - 9) What are the advantages of using a database over a file management system ?
3. A) Solve **any two** of the following. **10**
- 1) What is Serializability ? What are its types ?
  - 2) Describe various components of DBMS environment and discuss how they relate to each other.
  - 3) Explain the three level architecture of DBMS and its advantages.
- B) Explain cursor with its types. **4**
4. Write the answer of the following questions (**any two**). **14**
- 1) Discuss the various concurrency control protocols.
  - 2) What is deadlock ? Explain necessary conditions for deadlock and methods for handling it.
  - 3) Explain the following with their advantages and disadvantages.
    - a) Hierarchical database model
    - b) Network database model
    - c) Relational database model
5. Attempt **any two** of the following : **14**
- 1) Explain Shadow Paging with example.
  - 2) What are Codd's rule ?
  - 3) Define view. What are the types of view ? Write syntax to create view. Give an example of view.



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**B.Sc. (Entire Computer Science) – II (Semester – IV) (New-CBCS)  
Examination, 2018  
Paper – III : LINUX OPERATING SYSTEM**

Day and Date : Saturday, 5-5-2018  
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 place indicates full marks.*

1. Choose correct alternatives : 14
- 1) Which of the following command is used with file named 'letter' to remove the executable permission from the user and add read permission to the group and others ?  
A) `chmod u-x,go+r letter`                      B) `chmod u+x,go-r letter`  
C) `chmod ug-x,o=r letter`                      D) `chmod u+r,w,go-x letter`
  - 2) Which command is used to extract specific columns from the file ?  
A) Cat                      B) Grep                      C) Cut                      D) Paste
  - 3) Which command is true to create a file ?  
A) `cat >> file name`                      B) `cat << file name`  
C) `cat < file name`                      D) `cat > file name`
  - 4) Which of the following is not the category of Linux file system ?  
A) Ordinary file                      B) System file  
C) Device file                      D) Directory file
  - 5) The `chmod` command is used to change directories.  
A) True                      B) False
  - 6) The state of the file system is contained in \_\_\_\_\_  
A) Boot block                      B) Swap block  
C) Super block                      D) Root block



- 7) The shell metacharacter \$# represents \_\_\_\_\_  
A) Total number of arguments supplied to the shell script  
B) Total number of files in the current directory  
C) Total number of users who have Plogged in  
D) Total number of processes running in the background
- 8) The “nice” command is used to \_\_\_\_\_  
A) Communicate with other users  
B) Improve relationships  
C) Change priority levels of running processes  
D) Create processes
- 9) \_\_\_\_\_ directory contains the configuration files of the system.  
A) /dev                      B) /etc                      C) /bin                      D) /usr
- 10) The cp command is used \_\_\_\_\_  
A) to copy a single file                      B) to copy more than one file  
C) both A) and B)                      D) none of these
- 11) Which of the following command is used to see the content of “backup.tar” file without extracting it ?  
A) tar-xvf backup.tar                      B) tar-svf backup.tar  
C) tar-tvf backup.tar                      D) tar-dvf backup.tar
- 12) The symbol \_\_\_\_\_ sends the output of a command to a file or a device.  
A) >                      B) <                      C) \$                      D) #
- 13) \_\_\_\_\_ is the extension of Shell Program file.  
A) Unix                      B) Sh                      C) Dd                      D) Cc
- 14) How would you search a string ‘college’ at the end of the line in a ‘university’ file ?  
A) grep ‘college#’ university                      B) grep ‘college!’ university  
C) grep ‘college\$’ university                      D) grep ‘college^’ university

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

**14**

- 1) List the functions of Kernel.
- 2) Give the advantages of shell scripts.
- 3) What are the importance of /bin directory ?

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- 4) Give the advantages of vi editor.
  - 5) What is job ? How can you move a job from the foreground to the background ?
  - 6) What is the purpose of boot block ?
  - 7) Give the syntax of head command.
  - 8) Differentiate between egrep and fgrep.
  - 9) What is the use of pipe operation ?
3. A) Answer **any two** of the following : **10**
- 1) What is LILO ? Explain in detail with its uses.
  - 2) Explain the following command.
    - a) pwd
    - b) lpr
    - c) cut
  - 3) Write down role of system administrator.
- B) What is the purpose of find command ? Also discuss any 3 options with examples. **4**
4. Answer **any two** of the following : **14**
- 1) Explain line addressing and context addressing in “Sed” with example.
  - 2) List and explain different features of Linux operating system.
  - 3) Write a menu driven shell script :
    - a) To sort a file by 5 field with 2 column
    - b) To assign the write and read permission to a owner, add execute to all
    - c) To remove directory with its subdirectories.
    - d) Find files from current directory by inode number.
5. Answer **any two** of the following : **14**
- 1) List and explain Linux commands to communicate with other users.
  - 2) How to mounting and unmounting a Hard drive device ? Explain it.
  - 3) Explain management tools commands.
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**B.Sc. (ECS) – II (Semester – IV) (New CBCS) Examination, 2018  
COMPUTER GRAPHICS (Paper – IV)**

Day and Date : Monday, 7-5-2018  
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. Choose the most correct alternatives :

14

- 1) Which of the following graphics function is alternative for DETECT ?
  - a) Detectmode ()
  - b) Detectgraph ()
  - c) Modedetect ()
  - d) Graphdetect ()
- 2) The distortion of information due to low-frequency sampling is known as
  - a) Sampling
  - b) Aliasing
  - c) Inquiry function
  - d) Anti-aliasing
- 3) Expansion of line DDA algorithm is
  - a) Digital Difference Analyser
  - b) Direct Differential Analyser
  - c) Digital Differential Analyser
  - d) Data Differential Analyser
- 4) By applying \_\_\_\_\_ type of transformation, size and shape of graphics object changes.
  - a) Translation
  - b) Scaling
  - c) Rotation
  - d) Reflection
- 5) In Bresenham's line algorithm, if the distances  $d_1 < d_2$  then decision parameter  $P_k$  is
  - a) Positive
  - b) Equal
  - c) Negative
  - d) Both a) and c)
- 6) If polygon has total 'n' points then first argument in drawpoly () function is
  - a) n
  - b) n – 1
  - c) n\*2
  - d) n + 1
- 7) \_\_\_\_\_ computer graphics is also called as 'Passive computer graphics'.
  - a) Interactive
  - b) Non-interactive
  - c) Both a) and b)
  - d) None of these



- 8) We can combine the multiplicative and translational terms for 2D into a single matrix representation by expanding
- a)  $2 \times 2$  matrix into  $4 \times 4$  matrix                      b)  $2 \times 2$  matrix into  $3 \times 3$  matrix  
c)  $3 \times 3$  matrix into  $2 \times 2$  matrix                      d) none of these
- 9) \_\_\_\_\_ is equivalent Cartesian coordinate point for homogeneous point  $P(45, 27, 9)$ .
- a)  $P(54, 36)$                       b)  $P(36, 18)$                       c)  $P(5, 3)$                       d)  $P(18, 36)$
- 10) Consider 'Sx' and 'Sy' are scaling parameters used in Scaling. If  $Sx \& Sy < 1$  then \_\_\_\_\_ ?
- a) Size of image decreases                      b) Size of image increases  
c) Uniform scaling is done                      d) None of these
- 11) \_\_\_\_\_ is a smallest element of graphics object.
- a) Pixel                      b) Line                      c) Triangle                      d) Rectangle
- 12) The matrix representation for translation in homogeneous coordinate's is
- a)  $P' = T + P$                       b)  $P' = S * P$                       c)  $P' = R * P$                       d)  $P' = T * P$
- 13) \_\_\_\_\_ display uses 'scanline' technique to display an image.
- a) Random Scan                      b) Raster Scan  
c) Both a) and b)                      d) None of these
- 14) \_\_\_\_\_ is equivalent graphics function to `clrscr()` in textual mode.
- a) `clrgraph()`                      b) `cleardevice()`  
c) `clrall()`                      d) none of the above

2. Attempt **any seven** questions from the following :

**14**

- 1) List out advantages of Homogeneous coordinate system.
- 2) What is the role of display file interpreter ?
- 3) Differentiate between line printer and dot matrix printer.
- 4) How you retrieve maximum value on X-axis and Y-axis in 'C' graphics program ?
- 5) What is computer graphics ? List out its applications.
- 6) What is pixel phasing ?
- 7) List out various operations performed by display controller.
- 8) Give the 2D transformation matrix for Translation and Scaling.
- 9) Write merits and demerits of DDA line drawing algorithm.



3. A) Attempt **any two** of the following : **10**
- 1) Differentiate between 'Random Scan Display' and "Raster Scan Display".
  - 2) Scale the polygon with coordinates A(2, 5), B(7, 10) and C(10, 2) by 2 units in X direction and 2 units in Y-direction.
  - 3) What is Un-weighted area sampling and weighted area sampling in case of antialiasing ?
- B) What is composition of 2D transformation ? Explain with suitable example. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain following 'C' graphics function with example :
    - a) bar ()
    - b) bar3d()
    - c) pieslice()
  - 2) Write graphics program in 'C' language that translate any graphics object.
  - 3) Explain the steps in Bresenham's circle drawing algorithm with example.
5. Attempt **any two** of the following : **14**
- 1) Derive the transformation matrix for the rotation of graphics object about an arbitrary point.
  - 2) Explain DDA line drawing algorithm with suitable example.
  - 3) What is Display file ? Explain its structure.
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**B.Sc. (ECS) – II (Semester – IV) (CBCS) (New) Examination, 2018  
EMBEDDED SYSTEM – II (Paper – V)**

Day and Date : Tuesday, 8-5-2018  
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 the diagrams **if** necessary.*

1. Choose the correct alternatives.

14

- 1) \_\_\_\_\_ is the most commonly used UART.  
a) 8253                      b) 8254                      c) 8259                      d) 8250
- 2) \_\_\_\_\_ embedded system does not required host system.  
a) Real time              b) Stand Alone              c) Mobile                      d) None of these
- 3) In circuit emulator is used for \_\_\_\_\_  
a) Compiling              b) Linking                      c) Debugging              d) None of these
- 4) \_\_\_\_\_ tracks many signals at a time.  
a) CRO    b) Oscillator  
c) Logic analyzer                                      d) None of these
- 5) In \_\_\_\_\_ Programming model data flow depends upon the condition in the program.  
a) DFG                      b) CDFG                      c) SDFG                      d) FSM
- 6) For small scale embedded designer does not requires the \_\_\_\_\_ type of knowledge.  
a) Embedded C    b) RTOS  
c) Microcontroller    d) None of these
- 7) \_\_\_\_\_ tool is used for assign the memory address as well as memory maps.  
a) Linking    b) Locator  
c) Both a) and b)    d) None of these



- 8) \_\_\_\_\_ is standard that allows one transmitter and receiver.  
a) RS423      b) RS232      c) RS485      d) RS222
- 9) HOST machine is also called as \_\_\_\_\_  
a) Target      b) Development platform  
c) Editor      d) None of these
- 10) \_\_\_\_\_ is laboratory tools.  
a) Compiler      b) Debugger      c) Editor      d) Logic probe
- 11) The \_\_\_\_\_ method is used to design and analysis the software before implementation.  
a) Software design      b) Program modeling  
c) Hardware design      d) All of these
- 12) \_\_\_\_\_ type of software tool are used to create the object files from the complete set of Opcodes.  
a) Assembler      b) Interpreter      c) Compiler      d) None of these
- 13) Software development process is performed on \_\_\_\_\_ type of system.  
a) Host system      b) Target system  
c) Both a) and b)      d) None of these
- 14) In IDE includes \_\_\_\_\_  
a) Editor      b) Compiler      c) Simulator      d) All of these

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

14

- 1) What is UART ?
- 2) State the Embedded software tools.
- 3) Give the classification of embedded system.
- 4) Give classification of RS232.
- 5) Define target machine.
- 6) What is DFG model ?
- 7) Explain interfacing.
- 8) What is IEEE 802.11 ?
- 9) Explain modem cable connection.

Set P



3. A) Attempt **any two** of the following : **10**
- 1) Explain need of interfacing in communication.
  - 2) Explain skill required for an embedded system design.
  - 3) Explain target system in embedded system.
- B) Explain concept of programming model in embedded system. **4**
4. Attempt **any two** of the following : **14**
- 1) What is USB ? Explain USB in details.
  - 2) Explain state machine programming model for event controlled program flow.
  - 3) State and explain debugging techniques and testing tools in embedded system.
5. Attempt **any two** of the following : **14**
- 1) State and explain elements of network.
  - 2) State and explain development process and tools used in embedded system.
  - 3) Explain modeling of multiprocessor system.
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**B.Sc. (ECS) – II (Semester – IV) (New CBCS Pattern) Examination, 2018  
PERIPHERALS & INTERFACING (Paper – VI)**

Day and Date : Friday, 11-5-2018  
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 most correct alternative.

14

- 1) 8253 has \_\_\_\_\_ number of modes.  
a) 8                      b) 4                      c) 3                      d) 6
- 2) Instruction set of 8086 includes \_\_\_\_\_ instruction.  
a) 77                      b) 133                      c) 130                      d) 131
- 3) The 8051 has \_\_\_\_\_ parallel I/O ports.  
a) 2                      b) 3                      c) 4                      d) 5
- 4) STC is \_\_\_\_\_ instruction.  
a) logical                      b) data transfer  
c) processor control                      d) none of these
- 5) In linear decoding \_\_\_\_\_ line is used to generate chip select.  
a)  $A_{14}-A_{19}$                       b)  $A_{19}$                       c)  $A_{14}$                       d)  $A_{16}$
- 6) The internal RAM memory of the 8051 is \_\_\_\_\_ bytes.  
a) 32                      b) 64                      c) 128                      d) 256
- 7) The 8086 microprocessor has \_\_\_\_\_ byte instruction queue.  
a) 4                      b) 6                      c) 2                      d) 8
- 8) \_\_\_\_\_ is arithmetic instruction.  
a) AAA                      b) RCL                      c) STC                      d) MOV
- 9) 8255 has \_\_\_\_\_ number of I/O ports.  
a) 8                      b) 4                      c) 3                      d) 6
- 10) Virtual memory of 80386 is  
a) 64TB                      b) 64GB                      c) 64KB                      d) 4GB
- 11) 8257 is \_\_\_\_\_ device.  
a) PPI                      b) DMA                      c) PIC                      d) none of these

P.T.O.



- 12) \_\_\_\_\_ is the unconditional transfer instruction.  
a) JMP                      b) JC                      c) JNZ                      d) JNC
- 13) Pentium processor is introduced in \_\_\_\_\_  
a) 1992                      b) 1993                      c) 1991                      d) 1994
- 14) When pin no. 33 is connected to the  $V_{CC}$  the 8086 is operates in \_\_\_\_\_ mode.  
a) minimum                      b) maximum                      c) both a and b                      d) none of these
2. Attempt **any seven** of the following. **14**
- 1) Explain PUSH and POP instruction.
  - 2) Explain AAA & DAA.
  - 3) Give the features of 8086.
  - 4) Explain shift instruction.
  - 5) Explain BSR mode of 8255.
  - 6) Explain multiplication instructions of 8086.
  - 7) What are the difference between RISC and CISC.
  - 8) Explain count register of 8257.
  - 9) Give the features of 8051 microcontroller.
3. A) Attempt **any two** of the following. **10**
- 1) Explain bit manipulation instructions.
  - 2) Explain memory mapped I/O.
  - 3) Explain block diagram of 8257.
- B) Explain absolute address decoding. **4**
4. Answer **any two** of the following. **14**
- 1) Explain with suitable diagram of maximum mode of 8086.
  - 2) Explain architecture of microcontroller 8051.
  - 3) Explain interfacing of LED display to microprocessor.
5. Answer **any two** of the following. **14**
- 1) Explain flag registers of microprocessor 8086.
  - 2) Explain 8253 with suitable diagram.
  - 3) Explain data transfer instruction with example.





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**B.Sc. (E.C.S.) II (Semester – IV) (Old CGPA) Examination, 2018**  
**Paper – I : OPERATING SYSTEM – II**

Day and Date : Thursday, 3-5-2018  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

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

1. Choose the correct alternative :

14

- 1) The FIFO algorithm \_\_\_\_\_.
  - a) executes first the job that last entered the queue
  - b) executes first the job that first entered the queue
  - c) execute first the job that has been in the queue the longest
  - d) executes first the job with the least processor needs
- 2) The memory allocation scheme subject to “external” fragmentation is \_\_\_\_\_.
  - a) segmentation
  - b) swapping
  - c) pure demand paging
  - d) multiple contiguous fixed partitions
- 3) Dijkstra’s Bankers algorithm in an Operating System solve the problems of
  - a) Deadlock avoidance
  - b) Deadlock recovery
  - c) Mutual exclusion
  - d) Context switching
- 4) \_\_\_\_\_ allocates the largest hole available in the memory.
  - a) best fit
  - b) first fit
  - c) worst fit
  - d) none of these
- 5) File record length \_\_\_\_\_.
  - a) should always be fixed
  - b) should always be variable
  - c) depends upon the size of file
  - d) should be chosen to match the data characteristics
- 6) Virtual memory can be implemented with
  - a) segmentation
  - b) paging
  - c) none
  - d) all of the above

P.T.O.



- 7) Before proceeding with its execution, each process must acquire all the resources it needs is called \_\_\_\_\_.
- a) hold and wait
  - b) no pre-emption
  - c) circular wait
  - d) starvation
- 8) A UNIX device driver is
- a) Structured into two halves called top half and bottom half
  - b) Three equal partitions
  - c) Unstructured
  - d) None of the above
- 9) An operating system contains 3 user processes each requiring 2 units of resource R. The minimum number of units of R such that no deadlocks will ever arise is
- a) 4
  - b) 3
  - c) 5
  - d) 6
- 10) Which of the following approaches do not require knowledge of the system state ?
- a) deadlock detection
  - b) deadlock prevention
  - c) deadlock avoidance
  - d) none of the above
- 11) Paging \_\_\_\_\_.
- a) solves the memory fragmentation problem
  - b) allows modular programming
  - c) allows structured programming
  - d) avoids deadlock
- 12) 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
- 13) The segment of code in which the process may change common variables, update tables, write into files is known as
- a) program
  - b) critical section
  - c) non-critical section
  - d) synchronizing
- 14) A page fault
- a) Occurs when a program access a page memory.
  - b) Is an error in a specific page ?
  - c) Is an access to a page not currently in memory ?
  - d) Is a reference to a page belonging to another page ?



2. Answer the following (**any 7**) : **14**
- 1) List types of resources in deadlock problems on computer.
  - 2) What is Kernal ?
  - 3) What is virtual memory ?
  - 4) List out different file attributes.
  - 5) Compare paging and segmentation.
  - 6) Define swapping.
  - 7) What is first fit ?
  - 8) Write necessary condition of deadlock.
  - 9) Define double buffering.
3. A) Answer the following (**any 2**) : **10**
- 1) Explain swapping technique for memory management with diagram.
  - 2) Explain architecture of Unix O.S.
  - 3) Explain deadlock detection.
- B) Explain virtual memory with demand paging. **4**
4. Answer the following (**any 2**) : **14**
- 1) Explain file directory structure.
  - 2) Draw and explain process state transition diagram for Unix O.S.
  - 3) Explain Banker's and safety algorithm.
5. Answer the following (**any 2**) : **14**
- 1) Write different file accessing method.
  - 2) Solve the following string by FIFO and optimal replacement algorithm  
(Take Frames 3)  
and also define page fault.  
1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5
  - 3) Write advantages and disadvantages of buffer cache.



**SLR-SC – 41**

Seat No.	
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**B.Sc. (ECS) – II (Semester – IV) (CGPA) (Old) Examination, 2018  
COMPUTER SCIENCE (Paper – II)  
Object Oriented Programming Using C++ – II**

Day and Date : Friday, 4-5-2018

Max. Marks : 70

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

1. Choose and write correct answer from given alternatives : **14**

- 1) File allows temporary storage of data
  - a) true
  - b) False
- 2) All manipulator belongs to \_\_\_\_\_ header file.
  - a) manip.h
  - b) iomanip.h
  - c) format.h
  - d) both b) and c)
- 3) Stream is the sequence of \_\_\_\_\_ and serves as a source and destination for an I/O data.
  - a) Bytes
  - b) Words
  - c) Kilobytes
  - d) None of these
- 4) Which one is not exception handling construct ?
  - a) try
  - b) throw
  - c) catch
  - d) set-terminate()
- 5) This unique pointer is automatically passed to \_\_\_\_\_ function it is called.
  - a) virtual
  - b) member
  - c) friend
  - d) none of these
- 6) If a virtual function is defined in the base class, it need not be necessarily redefined in the \_\_\_\_\_ class.
  - a) base
  - b) super
  - c) derived
  - d) local

**P.T.O.**



- 7) The class \_\_\_\_\_ provides the basic support for formatted and unformatted I/O operations.
  - a) istream
  - b) iostream
  - c) ios
  - d) none of these
- 8) The point at which the \_\_\_\_\_ is executed is called the throw point.
  - a) try
  - b) catch
  - c) throw
  - d) none of these
- 9) If an exception is not caught, abnormal program \_\_\_\_\_ will occur.
  - a) aborted
  - b) sorted
  - c) terminated
  - d) none of these
- 10) The following which function is used to check the current position of an output stream.
  - a) tellg
  - b) tellp
  - c) get( )
  - d) put( )
- 11) We can have virtual destructors but not virtual \_\_\_\_\_.
  - a) class
  - b) block
  - c) constructors
  - d) none of these
- 12) A class can contain objects of other classes, this is know as \_\_\_\_\_.
  - a) Inheritance
  - b) Polymorphism
  - c) Nesting
  - d) None of these
- 13) The pointers which are not initialized in a program are call \_\_\_\_\_.
  - a) Value pointer
  - b) NULL pointer
  - c) Void pointer
  - d) None of these
- 14) \_\_\_\_\_ option is sued to open the file for input and output operation.
  - a) ios::out
  - b) ios::in
  - c) ios::ate
  - d) ios::trunc

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

14

- 1) What is file ?
- 2) What is a pure virtual function ?
- 3) What do you mean by inheritance ?
- 4) What is meant by Exception ?



- 5) Define seekg(), seekp.
  - 6) Basics of Exception Handling.
  - 7) Define getline() and write().
  - 8) Explain Pointers in C++.
  - 9) Hybrid Inheritance.
3. A) Attempt **any two** of the following : **10**
- 1) Explain this pointer, with suitable program.
  - 2) Difference between Virtual function and Pure Virtual function.
  - 3) Difference between access specifiers private and protected.
- B) Write a program that read the file content randomly display contents on screen. **4**
4. Attempt **any two** of the following : **14**
- 1) Write a program which demonstrate the exception handling.
  - 2) Explain pointers to derived class with suitable example.
  - 3) Draw file stream class hierarchy diagram and explain its members.
5. Attempt **any two** of the following : **14**
- 1) Write a program that accept natural number and write them into file.
  - 2) Write a program to demonstrate the multiple inheritance concept.
  - 3) Explain multiple catch statement in exception handling with suitable program.
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**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2018**  
**DATA STRUCTURES, ALGORITHMS ENGINEERING – II (Paper – III) (Old)**

Day and Date : Saturday, 5-5-2018  
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. A) Choose correct alternatives : 10
- 1) Post order traversal work as \_\_\_\_\_
    - a) left, right, root
    - b) right, root, left
    - c) root, left, right
    - d) none of these
  - 2) Shell sort is also called as \_\_\_\_\_
    - a) push down sort
    - b) dimensional sort
    - c) partition exchange sort
    - d) none of these
  - 3) Which of the following statement is false ?
    - a) Every tree is a bipartite graph
    - b) A tree with n node contains n-1 edges
    - c) A tree contains a cycle
    - d) A tree is a connected graph
  - 4) Linear search method searching begin from \_\_\_\_\_ element.
    - a) Middle
    - b) Last
    - c) First
    - d) None of these
  - 5) DFS uses \_\_\_\_\_ data structure for implementation.
    - a) Queue
    - b) Stack
    - c) Both a and b
    - d) None of these
  - 6) To represent hierarchical relationship between elements, which data structure is suitable ?
    - a) Queue
    - b) Stack
    - c) Tree
    - d) None of these
  - 7) Terminal node have \_\_\_\_\_ child.
    - a) 1
    - b) 0
    - c) 2
    - d) 3
  - 8) Time complexity of radix sort method is \_\_\_\_\_
    - a)  $O(n)$
    - b)  $O(m*n)$
    - c)  $O(n \log n)$
    - d) None of these
  - 9) Which of the following data structure is non-linear type ?
    - a) String
    - b) List
    - c) Stack
    - d) Graph
  - 10) The no. of external nodes in a full binary tree with n internal nodes is
    - a) n
    - b) n+1
    - c) n+2
    - d) 2n



- B) State **True/False** : 4
- 1) Quick sort is also known as partition exchange sort.
  - 2) BFS use queue data structure for implementation.
  - 3) The internal node has only one child.
  - 4) The binary search operate on sorted as well as unsorted data.
2. Answer **any seven** of the following : 14
- 1) Define searching list out different searching technique.
  - 2) Define leaf node and sibling.
  - 3) What is binary expression tree ?
  - 4) List out applications of graph.
  - 5) What is weighted graph ?
  - 6) Explain advantage of threaded binary tree.
  - 7) List out applications of tree.
  - 8) What is difference between linear and binary search ?
3. A) Answer **any two** of the following : 10
- 1) What is binary tree ? Explain types of binary tree.
  - 2) Write a function to implement bubble sort.
  - 3) Write a note on height balance tree.
- B) Explain different Hash functions with example. 4
4. Answer **any two** of the following : 14
- 1) Explain BFS graph traversal method in detail.
  - 2) Sort the following data using quick sort method with algorithm  
55, 7, 48, 32, 18, 23, 82, 62.
  - 3) Write a program to insert node in binary search tree and traverse it by any method.
5. Answer **any two** of the following : 14
- 1) Explain tree traversing technique with example.
  - 2) Write a program to implement insertion sort.
  - 3) Write a program to implement binary search method.
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**B.Sc. (ECS) – II (Semester – IV) (Old CGPA) Examination, 2018**  
**Paper – IV : COMPUTER SCIENCE**  
**Software Engineering – II**

Day and Date : Monday, 7-5-2018  
Time : 10.30 a.m. to 1.00 p.m.

Max. Marks : 70

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

1. Choose the correct alternative :

14

- 1) The Data Flow Diagram (DFD) shows
  - a) The flow of data
  - b) The processes
  - c) The areas where data are stored
  - d) All of these
- 2) Which of the following is not element of Data Dictionary (DD) ?
  - a) Length
  - b) Range
  - c) Data type
  - d) Data group
- 3) A structure chart is a design tool that shows the relationship between program modules.
  - a) True
  - b) False
- 4) Conversion method in which users being used to an old system, continue to use an old system along with the new system is
  - a) Multiprocessing
  - b) Parallel run
  - c) Direct
  - d) Pilot approach
- 5) \_\_\_\_\_ involves collection of modules testing.
  - a) System testing
  - b) Sub-system testing
  - c) Unit testing
  - d) Acceptance testing
- 6) In \_\_\_\_\_ every non-key element is transitively dependent on the primary key.
  - a) 1 NF
  - b) 2 NF
  - c) 3 NF
  - d) All of these
- 7) Which of the following is not a category of system maintenance ?
  - a) Corrective maintenance
  - b) Adaptive maintenance
  - c) Perfective maintenance
  - d) Effective maintenance



- 8) Which of the following is basic type of structured English ?  
a) Sequential structures                      b) Decision structures  
c) Looping structures                         d) All of these
- 9) \_\_\_\_\_ defines the relationships between the entities.  
a) ERD                      b) DFD                      c) DD                      d) FDD
- 10) In \_\_\_\_\_ every non-key items are fully dependent on the primary key.  
a) 1 NF                      b) 2 NF                      c) 3 NF                      d) 4 NF
- 11) Which of the following is not part of a DFD ?  
a) Disk storage    b) Data store    c) Process                      d) Data flow
- 12) The objective of testing is  
a) To analyze system                      b) To gain modularity  
c) Debugging                                d) To design system
- 13) During the maintenance phase  
a) Programs are tested                      b) System design  
c) Both a) and b)                            d) None of these
- 14) Cost of testing is less if it is White Box Testing (WBT).  
a) True    b) False

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

**14**

- 1) Give the importance of data dictionary.
- 2) What is the difference between adaptive and corrective maintenance ?
- 3) What is testing ?
- 4) Give the advantages of bottom-up incremental implementation.
- 5) What is the meaning of phase-in method ?
- 6) Give the difference between physical DFD and logical DFD.
- 7) What is structured English ?
- 8) Why normalization is necessary ?



3. A) Attempt **any two** of the following : **10**
- 1) Explain statistics on data store.
  - 2) State design principles of output.
  - 3) Short note on structured English.
- B) Write note on data validations. **4**
4. Attempt **any two** of the following : **14**
- 1) Explain integrated CASE environment.
  - 2) What is system maintenance ? Explain three categories of maintenance.
  - 3) Explain structured chart with example.
5. Attempt **any two** of the following : **14**
- 1) What is data capture ? State its objectives.
  - 2) Draw 0<sup>th</sup> level and first level DFD for Inventory Control System.
  - 3) Write the features of TURBO ANALYST.
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**SLR-SC – 44**

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**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2018**  
**(Old)**  
**ORGANIZATION OF PC – II (Paper – V)**

Day and Date : Tuesday, 8-5-2018  
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.*

**1. Multiple choice questions. 14**

- 1) \_\_\_\_\_ is a guided media.  
a) Air    b) Twisted pair cable  
c) Radiowave                                     d) Microwave
- 2) In \_\_\_\_\_ all computers are of equal capacity.  
a) server based network                      b) peer-to-peer network  
c) terminal                                         d) none
- 3) Fanout of TTL logic is  
a) 5 – 10                      b) 10 – 20                      c) 20 – 30                      d) 30 – 40
- 4) Microwave are  
a) Single direction                              b) Unidirectional  
c) Multidirectional                              d) None
- 5) Router operated at \_\_\_\_\_ layer.  
a) physical                      b) datalink                      c) application                      d) network
- 6) In \_\_\_\_\_ there are set of gates.  
a) PLA                      b) PAL                      c) CPLD                      d) FPGA
- 7) Intel 80286 is a 16 bit microprocessor with \_\_\_\_\_ address lines.  
a) 8                      b) 16                      c) 20                      d) 24
- 8) The \_\_\_\_\_ microprocessor is first intel microprocessor offering multitasking and virtual memory.  
a) 80186                      b) 80286                      c) 80386                      d) 80486
- 9) 80486 has onchip cache memory of \_\_\_\_\_ kb.  
a) 8                      b) 16                      c) 32                      d) 64
- 10) In \_\_\_\_\_ topology each computer is connected to all other computer.  
a) Bus                      b) Ring                      c) Hybrid                      d) Mesh



- 11) In \_\_\_\_\_ topology a cable fault affect the entire network.  
a) Bus                      b) Ring                      c) Hybrid                      d) Mesh
- 12) A \_\_\_\_\_ is a set of rules for communication between computers.  
a) operating system                      b) OSI layer  
c) protocol                      d) signal
- 13) \_\_\_\_\_ is a multiport repeater.  
a) Switch                      b) Hub                      c) Router                      d) Bridge
- 14) ULSI contains between \_\_\_\_\_ no. of gates.  
a) 10 and 100      b) 100 and 5000      c) 5000 and 50000      d) above 50000

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

14

- 1) Draw diagram of hybrid topology.
- 2) Write four characteristics of CMOS family.
- 3) What is CISC ?
- 4) Define noise immunity.
- 5) Give features of 80486 processor.
- 6) What is server based network ?
- 7) Draw diagram of PAL.
- 8) What is Peer-To-Peer network ?
- 9) Draw diagram of ring and bus topology.

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

10

- 1) Explain briefly hub, repeater and router.
- 2) Explain PLA.
- 3) Draw diagram of architecture of 80286 processor.

B) Explain RISC.

4

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

14

- 1) Explain Surface mount technology.
- 2) Explain any two guided media.
- 3) Discuss features of Pentium and Pentium Pro processor.

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

14

- 1) Explain CPLD.
- 2) Give features of 80286.
- 3) Explain LAN, MAN and WAN.



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**B.Sc. (ECS) – II (Semester – IV) (CGPA) Examination, 2018**  
**Paper – VI : MICROPROCESSORS – II (Old)**

Day and Date : Friday, 11-5-2018  
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. Multiple choice questions :

14

- 1) In BSR mode of 8255 D7 of control word is  
a) 0                      b) 1                      c) 10                      d) None of these
- 2) XLAT is \_\_\_\_\_ instruction.  
a) Arithmetic                      b) Logical  
c) Data transfer                      d) String
- 3) AAA is \_\_\_\_\_ instruction.  
a) Logical                      b) String  
c) Arithmetic                      d) Processor
- 4) \_\_\_\_\_ is program execution transfer instruction.  
a) CMPS                      b) CMC                      c) INTO                      d) LDS
- 5) 8257 is \_\_\_\_\_ device.  
a) PPI                      b) PIC                      c) DMA                      d) PT/C
- 6) \_\_\_\_\_ is processor control instruction.  
a) RCL                      b) CLD                      c) RET                      d) JZ
- 7) 80286 is \_\_\_\_\_ bit processor.  
a) 20                      b) 16                      c) 8                      d) 32
- 8) In linear decoding \_\_\_\_\_ line is used to generate chip select.  
a)  $A_{14}$                       b)  $A_{19}$                       c)  $A_{16}$                       d)  $A_{14-19}$
- 9) Clock speed of 80386 is \_\_\_\_\_ MHz.  
a) 66                      b) 50                      c) 60                      d) 100
- 10) 8255 has \_\_\_\_\_ I/O ports.  
a) 2                      b) 3                      c) 4                      d) 8
- 11) Each general purpose register of 8086 can store \_\_\_\_\_ bit data.  
a) 12                      b) 16                      c) 20                      d) 24
- 12) The 8086 microprocessor is \_\_\_\_\_ pin IC.  
a) 24                      b) 40                      c) 14                      d) 20



- 13) XCHG is a \_\_\_\_\_ type instruction.
- a) Data transfer    b) Logical  
c) Branch    d) Processor control
- 14) To unload the data from stack \_\_\_\_\_ instruction is used.
- a) PUSH                              b) POP                              c) HOLD                              d) HLDA

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

**14**

- 1) Explain any two rotate instructions.
- 2) Give comparison between I/O mapped I/O and Memory mapped I/O.
- 3) Explain any two bit manipulation instructions.
- 4) Draw format of BSR mode of 8255.
- 5) Explain DAA, AAA instruction.
- 6) Explain the functions of HOLD and HLDA pin of 8086.
- 7) Explain ready and test pins of 8086.
- 8) Give features of advanced processor.
- 9) What is PUSH and POP instructions ?

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

**10**

- 1) Give difference between 8086 and 8088.
- 2) Explain CWR of 8255 PPI.
- 3) Explain string instructions.

B) Explain flag register of 8086.

**4**

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

**14**

- 1) Explain BIU section of 8086.
- 2) Write program for addition, subtraction, multiplication and division of two 8 bit number.
- 3) Explain absolute decoding and linear decoding.

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

**14**

- 1) Explain interfacing of 4×4 matrixes keyboard.
- 2) Explain 8253 in brief.
- 3) Write program to arrange data in ascending order.



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**B.Sc. (ECS) – III (Semester – V) (CGPA) Examination, 2018  
DATA COMMUNICATION AND NETWORKING – I (Paper – I)**

Day and Date : Thursday, 12-4-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. Choose correct alternatives :

14

- 1) \_\_\_\_\_ splits data into chunks.
  - a) Message switching
  - b) Linear switching
  - c) Circuit switching
  - d) Packet switching
- 2) The information that has discrete state is called \_\_\_\_\_.
  - a) Analog
  - b) Discrete
  - c) Digital
  - d) None
- 3) The term \_\_\_\_\_ describes the position of the waveform relative to time 0.
  - a) Frequency
  - b) Phase
  - c) Amplitude
  - d) Time period
- 4) \_\_\_\_\_ transmission media has the highest transmission speed in a network.
  - a) Coaxial cable
  - b) Twisted pair cable
  - c) Optical fiber
  - d) Electrical cable
- 5) A set of communication line or router is called \_\_\_\_\_.
  - a) LAN
  - b) MAN
  - c) WAN
  - d) Subnet
- 6) Which one of the following task is not done by data link layer ?
  - a) Framing
  - b) Error control
  - c) Flow control
  - d) Channel coding





- 7) Exchange of information between two or more devices is known as \_\_\_\_\_
- a) Protocol
  - b) Data communication
  - c) Network
  - d) Law
- 8) Mouse is an example of \_\_\_\_\_ communication.
- a) Simplex
  - b) Half duplex
  - c) Full duplex
  - d) None of above
- 9) Which one of the following routing algorithm can be used for network layer design ?
- a) Shortest path algorithm
  - b) Distance vector routing
  - c) Link state routing
  - d) All of above
- 10) Each subscriber's telephone is connected directly to the \_\_\_\_\_
- a) Toll office
  - b) End office
  - c) Sectional office
  - d) Regional office
- 11) Parity checking technique is used for \_\_\_\_\_ error detection.
- a) Multi bit
  - b) Two bit
  - c) Single bit
  - d) Four bit
- 12) If the bit string 0111011111011110 is subjected to bit stuffing, the output string is \_\_\_\_\_
- a) 011101111110111110
  - b) 01110111110101111100
  - c) 0111011111010111110
  - d) 0111011111100111110
- 13) Which answer correctly lists the OSI PDUs in order ?
- a) Packet, Data, Frame, Segment, Bit
  - b) Bit, Data, Packet, Segment, Frame
  - c) Bit, Frame, Data, Segment, Packet
  - d) Data, Segment, Packet, Frame, Bit
- 14) \_\_\_\_\_ topology is also called as fully interconnected topology.
- a) Mesh
  - b) Star
  - c) Bus
  - d) Ring



2. Answer **any seven** of the following : **14**
- 1) Define the term bandwidth.
  - 2) Define the term protocol and state its key elements.
  - 3) What is Hamming distance ?
  - 4) Why protocol needed ?
  - 5) Define WAN.
  - 6) List at least four responsibilities of data link layer.
  - 7) What is logical addressing ? Name the layer whose function is logical addressing.
  - 8) What is flow control ?
  - 9) What is congestion ?
3. A) Attempt **any two** of the following : **10**
- 1) Write a note on satellite communication.
  - 2) Write a difference between connection oriented and connectionless services.
  - 3) What is switching ? Explain types of switching with advantages.
- B) Explain 'Go Back N' ARQ. **4**
4. Attempt **any two** of the following : **14**
- 1) What is PCM ? Explain pulse code modulation with figure.
  - 2) What is framing ? Explain any two framing methods in data link layer.
  - 3) What are the different congestion prevention policies ? Explain in detail.
5. Attempt **any two** of the following : **14**
- 1) Explain TCP/IP model in detail with diagram.
  - 2) What is CSMA/CD ? How CSMA/CD work ?
  - 3) Explain link state routing algorithm in detail.



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**B.Sc. [ECS] (CGPA) (Part – III) (Semester – V) Examination, 2018**  
**COMPUTER SCIENCE**  
**Database Management System – I (Paper – II)**

Day and Date : Friday, 13-4-2018  
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) \_\_\_\_\_ command is used to change definition of objects.  
a) change                      b) update                      c) alter                      d) modify
  - 2) The ER model describes data as \_\_\_\_\_  
a) Entities only                      b) Entities, relationships and attributes  
c) Attributes only                      d) None of these
  - 3) \_\_\_\_\_ object is used to improve the performance of query.  
a) index                      b) table                      c) sequence                      d) none
  - 4) Which of the following level of abstraction describes only part of the entire database ?  
a) Physical                      b) Logical                      c) View                      d) Conceptual
  - 5) The functions which accepts more than one value and return only one value is known as\_\_\_\_\_  
a) scalar                      b) aggregate                      c) both a and b                      d) none of these
  - 6) The employee salary should not be less than Rs. 5,000. This is \_\_\_\_\_  
a) Referential constraint                      b) Integrity constraint  
c) Feasible constraint                      d) Defined constraint
  - 7) View cannot used to handle security.  
a) True                      b) False
  - 8) The overall design of the database is called  
a) instance                      b) data                      c) schema                      d) table



- 9) The advantage of DBMS is \_\_\_\_\_.  
a) Data Independence                      b) Centralized control of data  
c) To avoid the data redundancy        d) All of these
- 10) The \_\_\_\_\_ is valid character used in identifier.  
a) #    b) @    c) \_    d) \$
- 11) Centralized Database Management cannot support multiple users.  
a) True    b) False
- 12) \_\_\_\_\_ is an example of composite attribute.  
a) Roll Number                                      b) Student name  
c) Exam\_no    d) All of these
- 13) An attribute of one table matching the primary key of another table is called as \_\_\_\_\_.  
a) candidate key                                      b) composite key  
c) foreign key    d) secondary key
- 14) Which will show contents of table College, where 2nd character of College\_name is 'r' ?  
a) select \* from College where College\_name like '\_r%';  
b) select \* from College where College\_name like 'r\_%';  
c) select \* from College where College\_name like '\$r%';  
d) select \* from College where College\_name like '?r%';

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

**14**

- 1) Define
  - a) domain                                      b) tuple
- 2) What are the advantages of view ?
- 3) Why there is need of sub -queries ?
- 4) What is difference between delete and truncate ?
- 5) What are the advantages of sequence ?
- 6) List the features of foreign key.
- 7) Give the syntax of Alter statement.
- 8) What is BCNF ?
- 9) What is difference between char() and varchar2() data type ?

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3. A) Answer **any two** of the following : 10
- 1) What is hashing ? Explain the concept of hashing.
  - 2) Explain database users in detail.
  - 3) Explain network data model.
- B) What is difference between traditional file system and database ? 4
4. Answer **any two** of the following : 14
- 1) What is normalization ? Describe normalization with its advantages.
  - 2) Why index is used ? Explain various methods of indexing.
  - 3) What is aggregation ? Explain with suitable example.
5. Answer **any two** of the following : 14
- 1) What is join ? Explain types of join with examples.
  - 2) Differentiate between 2-tier and 3-tier architecture.
  - 3) Explain relational algebra with its type and examples.
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**B.Sc. (ECS) – III (Semester – V) (CGPA) Examination, 2018**  
**Paper – III : COMPUTER SCIENCE**  
**Core Java**

Day and Date : Monday, 16-4-2018  
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 these operators is used to allocate memory to array variable in Java ?  
a) malloc                      b) calloc                      c) new                      d) new malloc
- 2) Which of these is an incorrect array declaration ?  
a) int arr[] = new int [5];                      b) int[] arr = new int [5];  
c) int arr[]; arr = new int [5];                      d) int arr[] = int [5] new
- 3) The keyword used to create a constant variable.  
a) const                      b) static                      c) final                      d) none of these
- 4) Name of the keyword that makes a variable belong to a class, rather than being defined for each instance of the class.  
a) static                      b) final                      c) abstract                      d) public
- 5) Which of these is not a correct statement ?  
a) Every class containing abstract method must be declared abstract  
b) Abstract class defines only the structure of the class not its implementation  
c) Abstract class can be initiated by new operator  
d) Abstract class can be inherited
- 6) Which method defined in integer class can be used to convert a whole number in string type to primitive int type ?  
a) valueOf()                      b) intValue()                      c) parseInt()                      d) getInteger()
- 7) The method that returns the selected item from a List component is  
a) getSelected()                      b) getSelectedString()  
c) getSelectedItem()                      d) getSelectedData()
- 8) The class for drawing the graphics in an application is  
a) Canvas                      b) Graphics                      c) Layer                      d) Container
- 9) The default layout manager of a frame is  
a) Flowlayout                      b) GridLayout                      c) BorderLayout                      d) BorderLayout



- 10) The \_\_\_\_\_ class is used to read characters from the file.
- a) StreamReader                                  b) CharacterReader  
c) InputReader                                  d) FileReader
- 11) Character Stream Classes support input/output operations on \_\_\_\_\_ characters.
- a) 8 bit unicode    b) 16 bit unicode    c) 32 bit unicode    d) 64 bit unicode
- 12) Which of these exceptions will occur if we try to access the index of an array beyond its length ?
- a) ArithmeticException  
b) ArrayException  
c) ArrayIndexException  
d) ArrayIndexOutOfBoundsException
- 13) Which of this method of Thread class is used to change the state of a thread to blocked state ?
- a) sleep()                  b) terminate()          c) stop()                  d) block()
- 14) Which of the following package stores all the standard java classes ?
- a) java.lang                  b) java                  c) java.util                  d) java.packages
2. Solve **any seven** : 14
- a) Define method overloading.  
b) Define multithreading.  
c) What is byte code ?  
d) What is the usage of JVM ?  
e) Define ItemListener.  
f) Usage of finally keyword.  
g) What is Panel ?  
h) Define constructor.  
i) List the methods of object class.
3. A) Solve **any two** : 10
- 1) Differentiate interface and abstract class.  
2) Explain TreeSet Class with an example.  
3) Design an Applet to perform arithmetic operations (use textfields, buttons and labels).
- B) Write a program to demonstrate method overriding. 4
4. Solve **any two** : 14
- 1) Write a program to implement multiple inheritance using interface.  
2) Explain Thread Life Cycle.  
3) Explain Adapter classes in java.
5. Solve **any two** : 14
- 1) Write a program to design a frame to implements Key Listener interface.  
2) Explain this keyword with example.  
3) Explain wait() and notify() with an example in java.



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**B.Sc. (ECS) – III (Semester – V) Examination, 2018**  
**THEORY OF COMPUTER SCIENCE (CGPA) (Paper – IV)**

Day and Date : Tuesday, 17-4-2018  
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. Choose correct alternatives :

14

- 1) \_\_\_\_\_ is an abstract entity.  
a) Symbol                      b) Alphabet                      c) Sting                      d) None of these
- 2) In Moore Machines the output is associated with the \_\_\_\_\_.  
a) DFA                      b) NFA                      c) State                      d) Transition
- 3) In PDA,  $\Gamma$  is an alphabet called \_\_\_\_\_ alphabet.  
a) Input                      b) Stack                      c) Tape                      d) None of these
- 4) The TM model consists of a finite control, \_\_\_\_\_ which divided into cell and a tape head that scans one cell of the tape at a time.  
a) An alphabet                      b) An input tape  
c) Blank symbol                      d) None of these
- 5) \_\_\_\_\_ is a regular expression and denotes the set  $\{\epsilon\}$ .  
a)  $\emptyset$                       b)  $\Sigma$                       c)  $\epsilon$                       d) None of these
- 6) \_\_\_\_\_ is a set of symbols from one alphabet.  
a) String                      b) Language                      c) Graph                      d) None of these
- 7) If  $L(r) = \{1, 11, 111, 1111, \dots\}$  then  $r =$  \_\_\_\_\_.  
a)  $(1)^+$                       b)  $(1)^*$                       c)  $(1 + 1)$                       d) None of these
- 8) Construct CFG which accepts set of Palindromes over  $\{0, 1\}$ ; production then  
a)  $S \rightarrow 0S1$                       b)  $S \rightarrow 1S0$                       c)  $S \rightarrow 0S0$                       d) None of these
- 9) A directed graph is called a \_\_\_\_\_.  
a) DFA                      b) Transition diagram  
c) NFA                      d) None of these

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- 10) A Turing Machine has \_\_\_\_\_ tuple.  
 a) 4                      b) 5                      c) 6                      d) 7
- 11) The capital letters denote symbols may be \_\_\_\_\_  
 a) Variables              b) Terminals              c) Both a) and b)      d) None of these
- 12) In deterministic finite automaton for each input symbol there is exactly \_\_\_\_\_ transition from each state.  
 a) Zero                      b) One                      c) Two                      d) None of these
- 13) Let  $f(a) = 01^*0$  and  $f(b) = 0^*1$  if  $L = a^*bb$  then  $f(L) =$  \_\_\_\_\_  
 a)  $01^*0^*01^*01$               b)  $01^*010^*1$               c)  $0^*10^*101^*1^*$               d) None of these
- 14) A set with no element is called an empty set, also called a null set and denoted as \_\_\_\_\_  
 a)  $\emptyset$                       b)  $\Sigma$                       c)  $\in$                       d) None of these

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

14

- 1) What is NFA ?
- 2) Define the terms :
  - a) Acceptance by empty stack
  - b) Acceptance by final state.
- 3) Define Concatenation and Kleen Closure.
- 4) Define the terms :
  - a) Symbol
  - b) Language.
- 5) Give the regular expression for the language :
  - a)  $L_1 =$  Set of all string beginning with a and having substring ba in it over  $\{a, b\}$
  - b)  $L_2 = \{\bullet, 0, 00, 000, \dots\}$
- 6) Construct DFA, that accept all and only the string of 0's and 1's that have the sequence 01 somewhere in the string, over an alphabet  $\{0, 1\}$ .
- 7) Write any four properties of relation.
- 8) Construct context free grammar for a language over  $\{0, 1\}$  which accepts strings having the number of 0's equal to the number 1's.
- 9) Consider following grammar :

$$S \rightarrow 0AS \mid 0$$

$$A \rightarrow S1A \mid SS \mid 10$$

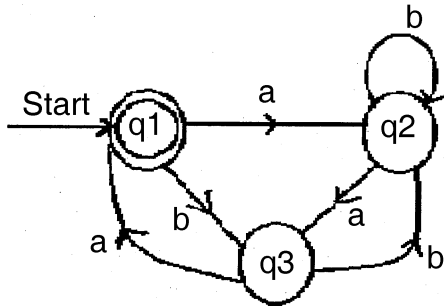
Write Leftmost derivation for string 000001100.



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

10

- 1) Write a note on Turing Machine.
- 2) Construct regular expression over {a, b} for the DFA in figure.



3) Define Moore Machine. Construct Melay machine for input from  $(0 + 1)^*$  such that if input string ends with '011' then it output '\*\*', if input string ends with '010' then it output '#' otherwise output '\$'.

B) Define :

- 1) CFG
- 2) Derivation tree.

4

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

14

1) Construct NFA without •-transition for NFA with •-transition in transition table.

$\delta$	0	1	2	•
$q_0$	$\{q_2\}$	$\{q_2\}$	$\emptyset$	$\{q_1\}$
$q_1$	$\emptyset$	$\{q_0\}$	$\{q_0\}$	$\{q_2\}$
$q_2$	$\emptyset$	$\{q_1, q_2\}$	$\{q_2\}$	$\emptyset$

2) Construct a FA equivalent to the regular expression  $(01 + 10)^* + 11^*$ .

3) What is the definition of PDA ? Construct PDA for language  $L = \{0^n 1^n \mid n \geq 1\}$ .

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

14

- 1) What is Set ? How to describing a set ? What is Subset ? Explain operation on set with example.
- 2) Construct TM for language  $L = \{0^i 1^i \mid i \geq 1\}$ .
- 3) Construct CFG in CNF equivalent to  $G = (\{S, A, B, D\}, \{0, 1\}, P, S)$  where  $P = \{S \rightarrow 0AB, A \rightarrow 0D \mid 1AD, B \rightarrow 0, D \rightarrow 1\}$ .



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**B.Sc. (ECS) (Part – III) (Semester – V) (CGPA) Examination, 2018  
WEB TECHNOLOGY AND E-COMMERCE – I (Paper – V)**

Day and Date : Wednesday, 18-4-2018  
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 alternative. 14

1) Negotiation in business transaction is consisting in \_\_\_\_\_ element of e commerce.

- a) EM                      b) EDI                      c) IC                      d) None of these

2) Global.asax file is used to

- a) store the application configuration  
b) implement application and session level events  
c) store configuration information  
d) store the session configuration

3) \_\_\_\_\_ validation control is used to check whether entered value is divisible by 5 or not.

- a) Range                      b) RequiredField  
c) Custom                      d) Compare

4) The advertisement file is a \_\_\_\_\_ type file.

- a) HTML                      b) XML Schema      c) XML                      d) DTD

5) EDI consists of paperless transactions.

- a) True                      b) False

6) The default event for Listbox is

- a) Click                      b) SelectedValueChanged  
c) SelectedIndexChanged      d) SelectedItemChanged

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- 7) \_\_\_\_\_ of the following is not an application folders used in ASP.NET.  
a) Bin                      b) App\_Browser   c) App\_Themes   d) App\_Server
- 8) \_\_\_\_\_ is not one of the force in Porter's five forces model.  
a) Buyer power                      b) Rivalry among existing competitors  
c) Threat of new entrants                      d) Consumer power
- 9) According to Sadden, MIS is in \_\_\_\_\_ phase of it evaluation.  
a) 1954-1974              b) 1975-1994      c) 1995-2014      d) Can't say
- 10) \_\_\_\_\_ property of radio button is used to make single selection from group of radio buttons.  
a) GroupName      b) SingleSelect   c) Group              d) CategoryName
- 11) \_\_\_\_\_ is not one of the environmental factor considered in strategy formulation.  
a) Economy              b) State              c) Labour              d) Environment
- 12) \_\_\_\_\_ event is used to customize individual day in a calender control.  
a) DayRender                      b) EachDate  
c) Everyday                      d) SelectedDateChanged
- 13) \_\_\_\_\_ directive is used for creating user control or custom control.  
a) Page                      b) Control  
c) CustomControl                      d) Assembly
- 14) \_\_\_\_\_ property of textbox control is used to determine which type of textbox control is rendered.  
a) TextMode              b) TextType              c) Text                      d) RenderType

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

14

- 1) Explain Internet Commerce.
- 2) What is Value chain ?
- 3) Explain 4 p's.
- 4) What is self page and cross page posting ?

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- 5) Explain at least 4 important properties of bulleted list.
  - 6) What is use of validation summary control ?
  - 7) What is a first mover advantage ?
  - 8) Give example of array of controls.
  - 9) What is IsPostBack and AutoPostBack ?
3. A) Answer the following **(any 2)**. **10**
- 1) Explain all definitions of E-commerce.
  - 2) Why master pages are required ? Explain in details.
  - 3) Explain strategic formulation and implementation technique.
- B) Explain Wizard control with example. **4**
4. Answer the following **(any 2)**. **14**
- 1) Explain Inter organisational value chain in detail.
  - 2) What is generic trade cycle ? Explain e-commerce and trade cycle.
  - 3) What are different page structure used in ASP.Net ? Explain partial classes in detail.
5. Answer the following **(any 2)**. **14**
- 1) What are difference between client side and server side validations ? Explain each validation controls with example.
  - 2) What is use of porter's model for competitive advantages ? Explain with diagram.
  - 3) What are different buttons used in ASP.Net ? Explain commandname and onclientclick property with example.
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**B.Sc. – III (Semester – V) (ECS) (CGPA) Examination, 2018  
VISUAL PROGRAMMING AND APPLICATION SOFTWARE – I  
(Paper – VI)**

Day and Date : Thursday, 19-4-2018

Max. 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. Choose correct alternatives :

14

- 1) Which of the classes provide the operation of reading from and writing to the console in C#.NET ?
  - a) System.Array
  - b) System.Output
  - c) System.ReadLine
  - d) System.Console
- 2) How many bytes are stored by 'Long' Datatype in C#.net ?
  - a) 8
  - b) 4
  - c) 2
  - d) 1
- 3) Correct way to assign values to variable 'c' when int a = 12, float b = 3.5, int c;
  - a) c = a + b;
  - b) c = a + int(float(b));
  - c) c = a + convert.ToInt32(b);
  - d) c = int(a + b);
- 4) Number of constructors a class can define is
  - a) 1
  - b) 2
  - c) Any number
  - d) None of the mentioned
- 5) Which among the following is the correct statement ?  
Constructors are used to
  - a) Initialize the objects
  - b) Construct the data members
  - c) Both a) and b)
  - d) None of the mentioned
- 6) What is the most specified using class declaration ?
  - a) Type
  - b) Type and scope
  - c) Scope
  - d) None of mentioned
- 7) The data members of a class by default are
  - a) protected, public
  - b) private, public
  - c) public
  - d) private
- 8) A sealed class cannot also be an \_\_\_\_\_ class.
  - a) derived
  - b) nested
  - c) abstract
  - d) private
- 9) \_\_\_\_\_ block can raise one or more statement that could generate an exception.
  - a) try
  - b) catch
  - c) finally
  - d) none



- 10) Which of the following operator can't be overloaded ?  
a) True                      b) ==                      c) &                      d) +=
- 11) All C# exceptions are derived from class \_\_\_\_\_.  
a) System Exception                      b) Exception  
c) Arithmetic Exception                      d) None
- 12) An object reference refers to value type is known as \_\_\_\_\_.  
a) boxing                      b) unboxing                      c) indexing                      d) clustering
- 13) The default value of integer type is \_\_\_\_\_.  
a) 0                      b) 1                      c) &                      d) +=
- 14) A method \_\_\_\_\_ an exception when that method detects the problem has occurred.  
a) Try                      b) Catch                      c) Throws                      d) All
2. Answer the following (**any seven**) : **14**
- 1) Explain Read only fields.
  - 2) What is CLR ?
  - 3) Explain strong data type.
  - 4) Explain Namespace Aliases.
  - 5) Explain Sealed Class.
  - 6) Define Interface.
  - 7) List different stream classes.
  - 8) Advantages of managed code.
  - 9) Define Destructor.
3. A) Answer the following (**any two**): **10**
- 1) Explain abstract class with example.
  - 2) Write a note on method overloading.
  - 3) Explain managed and unmanaged code.
- B) Explain life cycle of thread. **4**
4. Answer the following (**any two**) : **14**
- 1) Explain stream classes with examples.
  - 2) What is inheritance ? Explain types of inheritance.
  - 3) What are properties ? Explain with proper examples.
5. Answer the following (**any two**) : **14**
- 1) Explain .NET framework with suitable diagram.
  - 2) What is constructor ? Explain constructor overloading with example.
  - 3) Explain Generic collection classes.



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**B.Sc. (ECS) – III (Semester – VI) (CGPA) Examination, 2018**  
**COMPUTER SCIENCE (Paper – I)**  
**Data Communication and Networking – II**

Day and Date : Wednesday, 28-3-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

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

1. Choose correct alternatives :

14

- 1) Which of the following IP address class is multicast ?
  - a) A
  - b) B
  - c) C
  - d) D
- 2) Decryption algorithm \_\_\_\_\_
  - a) Encrypt input data
  - b) Decrypts the encrypted data
  - c) Both a) and b)
  - d) None of the above
- 3) Telnet uses \_\_\_\_\_ TCP port.
  - a) 23
  - b) 25
  - c) 53
  - d) 110
- 4) SMTP is a protocol used in \_\_\_\_\_
  - a) Electronic Mail Transmission
  - b) File transmission
  - c) Data transmission
  - d) Synchronizing computer clock on n/w
- 5) \_\_\_\_\_ is the security protocol.
  - a) HTTP
  - b) SSL
  - c) SNTP
  - d) DNS
- 6) \_\_\_\_\_ contains the public key of the organization encrypted with either its private key or the private key of a signing authority.
  - a) IPsec
  - b) Symmetric encryption
  - c) Digital Signature
  - d) Asymmetric encryption





- 7) \_\_\_\_\_ is a networking device that forwards data packets between computer networks.
- a) Hub
  - b) Switch
  - c) Bridge
  - d) Router
- 8) SET is a protocol standard for \_\_\_\_\_
- a) Securing credit card transactions
  - b) Secure email transfer
  - c) Secure data transfer
  - d) None of the above
- 9) HTTP is \_\_\_\_\_ protocol.
- a) Connectionless
  - b) Stateless
  - c) Both
  - d) None
- 10) Each IP packet must contains
- a) Only source addresses
  - b) Only destination address
  - c) Source and destination address
  - d) Source or destination address
- 11) What is a Firewall in computer network ?
- a) The physical boundary of network
  - b) An operating system of computer network
  - c) A system designed to prevent unauthorized access
  - d) A web browsing software
- 12) DNS is the abbreviation of
- a) Dynamic Name System
  - b) Dynamic Network System
  - c) Domain Name System
  - d) Domain Network Service
- 13) Which of the following is/are the types of firewall ?
- a) Packet Filtering Firewall
  - b) Application gateway
  - c) Both a) and b)
  - d) None of the above
- 14) In cryptography, what is cipher ?
- a) algorithm for performing encryption and decryption
  - b) encrypted message
  - c) both a) and b)
  - d) none of the mentioned



2. Answer **any seven** of the following : **14**
- 1) What is meant by VPN ?
  - 2) Explain encryption and decryption.
  - 3) Define router and switch.
  - 4) What is proxy server ?
  - 5) What is meant by anonymous FTP ?
  - 6) What is DNS ?
  - 7) What are the limitations of Firewall ?
  - 8) What is video conferencing ?
  - 9) What is UDP ?
3. A) Answer **any two** of the following : **10**
- 1) Explain audio compression in short.
  - 2) Explain entity authentication in short.
  - 3) Write a short note on digital signature.
- B) Explain GSM in detail. **4**
4. Answer **any two** of the following : **14**
- 1) Describe Wi-Fi network in detail.
  - 2) Describe IP security in detail.
  - 3) Explain group management in Linux.
5. Answer **any two** of the following : **14**
- 1) Describe Samba Server.
  - 2) Explain TCP segment with neat diagram in detail.
  - 3) Describe SSL in detail.
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SLR-SC – 55

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**B.Sc. (ECS) – III (Semester – VI) Examination, 2018**  
**DATABASE MANAGEMENT SYSTEM – II (CGPA) (Paper – II)**

Day and Date : Saturday, 31-3-2018  
Time : 2.30 p.m. to 5.00 p.m.

Total Marks : 70

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

1. Choose correct alternative :

- 1) Identify the characteristics of transaction  
a) Atomic                      b) Isolated                      c) Durability                      d) All of above
- 2) \_\_\_\_\_ helps solve concurrency problem.  
a) Locking    b) Transaction monitor  
c) Commit    d) Rollback
- 3) If transaction acquires exclusive locks, then it can perform \_\_\_\_\_ operation.  
a) Read    b) Write  
c) Read and Write    d) Update
- 4) In two phase locking protocol, a transaction release locks in \_\_\_\_\_ phase.  
a) Shrinking phase    b) Growing phase  
c) Running phase    d) Initial phase
- 5) Which of the following is not recovery technique ?  
a) Deferred update    b) Immediate update  
c) Two phase commit    d) Recovery management
- 6) In log based recovery, the log is sequence of  
a) Filter    b) Record    c) Blocks    d) Numbers
- 7) A deadlock exists in a the system if and only if the wait for graph  
a) has a cycle in it  
b) has path from first node to last node  
c) is tree  
d) none of the above

P.T.O.





- 7) What is use of % type ?
  - 8) What is shadow based recovery ?
  - 9) Write an applications of cursor.
3. A) Attempt **any 2** : **10**
- a) Explain view serializability.
  - b) What is package in PL/SQL ?
  - c) Explain transaction state diagram.
- B) Write a procedure to find out given number is palindrome. **4**
4. Attempt **any 2** : **14**
- A) What is deadlock ? How it is detected in DBMS ?
  - B) Create a cursor for display first 20 highest earners from employee.
  - C) What is transaction ? Explain properties of it.
5. Attempt **any 2** : **14**
- A) Explain two phase locking protocol.
  - B) What is trigger ? Create trigger for primary key generation.
  - C) Explain log based recovery technique.
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**B.Sc. (Entire Computer Science) – III (Semester – VI) (CGPA Pattern)  
Examination, 2018  
ADVANCED JAVA (Paper – III)**

Day and Date : Monday, 2-4-2018  
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. Select the correct alternatives :

14

- 1) A servlet maintain session in
  - a) Servlet container
  - b) Servlet context
  - c) Servlet request heap
  - d) Servlet response heap
- 2) Which driver is efficient and always preferable for using JDBC applications ?
  - a) Type – 4
  - b) Type – 1
  - c) Type – 3
  - d) Type – 2
- 3) What JSP stand for ?
  - a) Java Server Pages
  - b) Java Server Programming
  - c) Java Service Pages
  - d) Java Service Programming
- 4) Which method is used to perform DML statements in JDBC ?
  - a) execute()
  - b) executeQuery()
  - c) executeUpdate()
  - d) all of these
- 5) Which of the following is server side programming language ?
  - 1) HTML
  - 2) JavaScript
  - 3) JSP
  - 4) Servlets
  - a) 1, 2, 3, 4
  - b) 1, 2
  - c) 2, 3, 4
  - d) None
- 6) How many ServletContext objects are available for an entire web application ?
  - a) One each per servlet
  - b) One each per request
  - c) One each per response
  - d) Only one
- 7) Which are not directive ?
  - a) Page
  - b) Include
  - c) Taglib
  - d) Sriptlet



- 8) The major difference between Servlet and CGI is
- a) Servlets are thread based and CGI is process based
  - b) Servlets executes slower compared to CGI
  - c) Servlet has no platform specific API, where as CGI has
  - d) All of the above
- 9) Servlet mapping defines
- a) an association between a URL pattern and a servlet
  - b) an association between a URL pattern and a request page
  - c) an association between a URL pattern and a response page
  - d) all of the above
- 10) Choose correct scopes into JSP.
- a) page, request, session, application
  - b) page, response, session, application
  - c) page, request, response, session
  - d) none
- 11) Which of the following are the session tracking techniques ?
- a) URL rewriting, using session object, using response object, using hidden fields
  - b) URL rewriting, using session object, using cookies, using hidden fields
  - c) URL rewriting, using servlet object, using response object, using cookies
  - d) URL rewriting, using request object, using response object, using session object
- 12) What is the disadvantage of Type-4 Native-Protocol Driver ?
- a) At client side, a separate driver is needed for each database
  - b) Type-4 driver is entirely written in Java
  - c) The driver converts JDBC calls into vendor-specific database protocol
  - d) It does not support to read MySQL data
- 13) Syntax of Declaration Element in JSP
- a) `<%! code !%>`
  - b) `<%!code%>`
  - c) `<jsp:scriptlet code/>`
  - d) `<%jsp code !%>`
- 14) The life cycle of a servlet is managed by
- a) servlet context
  - b) servlet container
  - c) the supporting protocol (such as http or https)
  - d) all of the above



2. Solve **any seven** of the following : **14**
- 1) What is the use of forName() method in JDBC ?
  - 2) Differentiate between AWT and Swing.
  - 3) What are the advantages of java networking ?
  - 4) Who is responsible to create the object of servlet ?
  - 5) Which are commonly used methods for different Swing components ?
  - 6) What is the difference between ServletContext and PageContext ?
  - 7) What are the steps connect to the database in Java ?
  - 8) What is the difference between ServletConfig and ServletContext ?
  - 9) Why swing components are called lightweight components ?
3. A) Solve **any two** of the following : **10**
- 1) What are the benefits of prepared statements ?
  - 2) Explain socket programming in Java.
  - 3) What is the difference between Get and Post method ?
- B) What is Session Tracking ? **4**
4. Write the answer of the following questions (**any two**) : **14**
- 1) Explain the different types of JDBC drivers for database connectivity.
  - 2) How many tags are provided in JSTL ? Explain in detail.
  - 3) What are cookies ? State advantages and disadvantages of cookies.
5. Attempt **any two** of the following : **14**
- 1) Explain the lifecycle of a Servlet in detail.
  - 2) What are the JSP implicit objects ?
  - 3) Explain Java DatagramSocket and DatagramPacket with suitable example.
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SLR-SC – 57

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**B.Sc. (E.C.S.) – III (Semester – VI) (CGPA Pattern) Examination, 2018**  
**COMPUTER SCIENCE (Paper – IV)**  
**Compiler Construction**

Day and Date : Tuesday, 3-4-2018  
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 alternative :

14

- 1) In compilers generation of intermediate code based on an abstract machine model is useful because
  - A) Syntax-directed translations can be written for intermediate code generation
  - B) To generate code for real machines directly from high-level language programs is not possible
  - C) Portability of the front end of the compiler is enhanced
  - D) Implementation of lexical and syntax analysis is easier
- 2) We have the grammar  $E \rightarrow E+n|E \times n|n$ . The handles in the right-sentential form of the reduction for a sentence  $n + n \times n$  are
  - A)  $n, n + n$  and  $n + n \times n$
  - B)  $n, E + n$  and  $E \times n$
  - C)  $n, E + n$  and  $E + E \times n$
  - D)  $n, E + n$  and  $E + n \times n$
- 3) The languages that need heap allocation in the runtime environment are
  - A) Those that use global variables
  - B) Those that use dynamic scoping
  - C) Those that support recursion
  - D) Those that allow dynamic data structure

P.T.O.



- 4) In some programming language, L denotes the set of letters and D denotes the set of digits. An identifier is permitted to be a letter followed by any number of letters or digits. The expression that defines an identifier is
- A)  $(L.D)^*$                       B)  $(L + D)^*$                       C)  $L(L.D)$                       D)  $L(L + D)^*$

- 5) Which one of the following statement is true ?

- A) Canonical LR parser is more powerful than LALR parser  
 B) SLR parser is more powerful than LALR  
 C) LALR parser is more powerful than canonical LR parser  
 D) SLR parser, canonical LR parser and LALR parser all have the same power

- 6) Consider the following C program :

```
int main (){/*line1*/
int i, n;/*line 2*/
for (i=0,i
```

While creating the object module, the compiler's response about Line No.3 is

- A) Only syntax error                                      B) No compilation error  
 C) Only lexical error                                      D) Both lexical and syntax error

- 7) We have the translation scheme given below :

$S \rightarrow FR$   
 $R \rightarrow *E\{\text{print}('*');R\} \in$   
 $E \rightarrow F+E\{\text{print}('+');\}F$   
 $F \rightarrow (S) | \text{id}\{\text{print}(\text{id.value});\}$

In the above translation scheme id represents the token in integer form and id value represents the corresponding integer value. What will be printed by this translation scheme when an input is '2 \* 3 + 4' ?

- A) 2 3 \* 4 +    B) 2 3 4 +\*  
 C) 2 \* + 3 4    D) 2 \* 3 + 4

- 8) For the expression grammar

$E \rightarrow E * F | F + E | F$   
 $F \rightarrow F - | \text{id}$

The statement, which holds true, is

- A) + and - have same precedence                      B) Precedence of \* is higher +  
 C) Precedence of - is higher \*                              D) Precedence of + is higher \*



- 9) Which one of the following statements holds true for a bottom-up evaluation of syntax directed definition ?
- A) Inherited attributes can always be evaluated
  - B) Inherited attributes can never be evaluated
  - C) Inherited attributes can be evaluated only if the definition is L-attributed
  - D) Inherited attributes can be evaluated only if the definition has synthesized attributes
- 10) For predictive parsing, the grammar  $A \rightarrow AA \mid (A) \mid \epsilon$  is not suitable because
- A) The grammar is right recursive
  - B) The grammar is left recursive
  - C) The grammar is ambiguous
  - D) The grammar is an operator grammar
- 11) Assuming that the input is scanned in left to right order, while parsing an input string the top-down parser use
- A) Rightmost derivation
  - B) Leftmost derivation
  - C) Rightmost derivation that is traced out in reverse
  - D) Leftmost derivation that is traced out in reverse
- 12) \_\_\_\_\_ is a top-down parser.
- A) Operator precedence parser
  - B) An LALR (k) parser
  - C) An LR (k) parser
  - D) Recursive descent parser
- 13) Why is the code optimizations are carried out on the intermediate code ?
- A) Because for optimization information from the front end cannot be used
  - B) Because program is more accurately analyzed on intermediate code than on machine code
  - C) Because for optimization information from data flow analysis cannot be used
  - D) Because they enhance the portability of the compiler to the other target processor
- 14) In a compiler, when is the keyboards of a language are recognized ?
- A) During the lexical analysis of a program
  - B) During parsing of the program
  - C) During the code generation
  - D) During the data flow analysis



2. Answer the following (**any seven**) : **14**
- 1) List the phases that constitute the front end of a compiler.
  - 2) What is meant by Handle and Handle Pruning ?
  - 3) Why lexical and syntax analyzers are separated out ?
  - 4) What is operator precedence parser ?
  - 5) What are the problems with top down parsing ?
  - 6) What is phrase level error recovery ?
  - 7) Mention the functions that are used in back-patching.
  - 8) What is a flow graph ?
  - 9) What is code motion ?
3. A) Answer the following (**any two**) : **10**
- 1) Consider the following Context Free Grammar  $G = (\{S, A, B\}, S, \{a, b\}, P)$  where P is
    - $S \rightarrow AaAb$
    - $S \rightarrow Bb$
    - $A \rightarrow \epsilon$
    - $B \rightarrow \epsilon$
    - a) Compute the FIRST sets for A, B and S.
    - b) Compute the FOLLOW sets for A, B and S.
    - c) Is the CFG G LL(1) ? Justify ?
  - 2) Define string. Give commonly used string related terms with example.
  - 3) What are the types of Parser ? Give some common programming errors with example which can occur at different levels.
- B) Consider the expression  $a + a * (b - c) + (b - c) * d$ . **4**
- a) Draw the Syntax Tree.
  - b) Draw the DAG.
  - c) Give the postfix notation for same.
  - d) Give the code sequence for the same.



4. Answer the following (**any two**) :

14

- 1) Explain an Activation Record.
- 2) Construct a table-based LL(1) predictive parser for the following grammar :  
 $G = \{bexpr, \{bexpr, bterm, bfactor\}, \{not, or, and, (, ), true, false\}, P\}$  with P given below.

$bexpr \rightarrow bexpr \text{ or } bterm \mid bterm$

$bterm \rightarrow bterm \text{ and } bfactor \mid bfactor$

$bfactor \rightarrow not \ bfactor \mid (bexpr) \mid true \mid false$

For this grammar, answer the following questions :

- a) Remove left recursion from G.
  - b) Left factor the resulting grammar in (a).
  - c) Compute the FIRST and FOLLOW sets for non-terminals.
  - d) Construct the LL parsing table.
- 3) Explain the primary structure preserving transformations and algebraic transformations on basic block with example.

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

14

- 1) What is Shift-Reduce Parsing ? Consider the following grammar and input string. Parse the string using shift reduce parser. Show the content of the stack, input and action taken at each stage.

$S \rightarrow aB \mid bA$

$A \rightarrow bAA \mid aS \mid a$

$B \rightarrow aBB \mid bS \mid b$

Input string : aabbab

- 2) Explain in detail Loops in Flow Graphs.
- 3) What are the various methods of implementing three address statements ? Also give the types of three address statements.



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**B.Sc. (ECS) – III (Semester – VI) (CGPA) Examination, 2018  
WEB TECHNOLOGY AND E-COMMERCE – II (Paper – V)**

Day and Date : Wednesday, 4-4-2018  
Time : 2.30 p.m. to 5.00 p.m.

Max. Marks : 70

1. Choose correct alternative :

14

- 1) \_\_\_\_\_ is not a way to maintain state.
  - a) Viewstate
  - b) Cookies
  - c) Request Object
  - d) HiddenField
- 2) \_\_\_\_\_ element in web.config file to store username and password of users.
  - a) <authentication>
  - b) <credential>
  - c) <authorization>
  - d) <identity>
- 3) On ASP.NET formpage the object which contains the user name is \_\_\_\_\_
  - a) Page.User.Identity
  - b) Page.User.IsInRole
  - c) Page.User.Name
  - d) All of the above
- 4) When we need to retrieve only a single value from database which method is efficient ?
  - a) ExecuteReader()
  - b) ExecuteScalar()
  - c) ExecuteNonQuery()
  - d) ExecuteXmlReader()
- 5) By default, ASP.NET stores SessionIDs in \_\_\_\_\_
  - a) Cache
  - b) Cookies
  - c) Database
  - d) Global Variable
- 6) You must provide \_\_\_\_\_, in order to display data in a Repeater control.
  - a) Item Template
  - b) Alternateteltem Template
  - c) Display Template
  - d) Print Template
- 7) \_\_\_\_\_ method invokes for Data Adapter control to load generated Dataset with data.
  - a) Load()
  - b) Fill()
  - c) DataList()
  - d) DataBind()



- 8) \_\_\_\_\_ is not an Authentication type in ASP.NET ?  
a) Windows Authentication                      b) Forms Authentication  
c) Passport Authentication                      d) File Authentication
- 9) The \_\_\_\_\_ control has a in-built support for Sort, Filter and paging the Data.  
a) DataGrid              b) DataList              c) Repeater              d) FormView
- 10) \_\_\_\_\_ is the name for direct computer to computer transfer of transaction information contained in standard business document.  
a) Internet commerce                      b) e-commerce  
c) EDI                      d) Electronic market
- 11) A combination of software and information designed to provide security and information for payment is called \_\_\_\_\_  
a) Digital Wallet    b) PopUpAds              c) Shopping Cart    d) Encryption
- 12) The Default Orientation of MENU Control is Vertical.  
a) True                      b) False
- 13) EnableViewState allows page to save the users input on a form.  
a) True                      b) False
- 14) \_\_\_\_\_ event is generated when a page selection element is clicked in the Data Grid control.  
a) IndexChanged                      b) PageChanged  
c) PageIndexChanged                      d) IndexPagechanged

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

14

- 1) Explain Timer Control.
- 2) Explain Authorization.
- 3) What is Trade document exchange ?
- 4) Uses of e-market.
- 5) Explain DataReader.
- 6) Explain LoginName control.
- 7) Difference between ExecuteScalar () and ExecuteNonQuery().
- 8) Explain EDI.
- 9) Virtual Auctions.



3. A) Answer the following (**any 2**) : **10**
- 1) Explain UpdatePanel AJAX Control with example.
  - 2) Write note on Online Payments used in e-commerce.
  - 3) What is the Role of Command Object in ADO.NET connection explain in brief.
- B) How to cache multiple versions of same web page based on QueryString parameters passed to it ? **4**
4. Answer the following (**any 2**) : **14**
- 1) Explain Forms Authentication with example.
  - 2) What is site navigation ? Explain tree view and menu control in detail.
  - 3) Explain Website Evaluation Model.
5. Answer the following (**any 2**) : **14**
- 1) Define State Management and explain its types in brief.
  - 2) Design a Webpage having stored procedure to delete record by roll number.
  - 3) Explain different technique used for delivery of goods.
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**B.Sc. (ECS) (Part – III) (Semester – VI) (CGPA) Examination, 2018  
Paper – VI : VISUAL PROGRAMMING AND APPLICATION SOFTWARE – II**

Day and Date : Thursday, 5-4-2018  
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 alternative :

14

- 1) \_\_\_\_\_ LINQ keyword is used to categorize results in a query.  
a) Group                      b) Join                      c) Where                      d) Select
- 2) Choose incorrect statement about delegate.  
a) Delegates are reference types  
b) Only one method can be called using a delegate  
c) Delegates are object oriented  
d) Delegates are type-safe
- 3) In crystal report, \_\_\_\_\_ section displays all records.  
a) Report Header    b) Page Header    c) Group Header    d) Detail
- 4) \_\_\_\_\_ interface defines the basic extension methods for LINQ.  
a) IComparable<T>                      b) IEnumerable  
c) IList                      d) IQueryable<T>
- 5) Shared assembly are used only for same class/namespace.  
a) True                      b) False
- 6) \_\_\_\_\_ is the correct ways to declare a delegate for calling the Add () defined in the sample class as given below.  

```
class Add  
{  
    public int func (int i, int j)  
    {  
        /* Add code here.*/  
    }  
}
```

  
a) delegate d(int i, int j) ;                      b) delegate void (int i, int j);  
c) delegate void d(int, int);                      d) delegate int d(int i, int j);



- 7) \_\_\_\_\_function is used to find square root in crystal report.  
a) Sqrt ()                      b) Sqr ()                      c) Root ()                      d) None of these
- 8) Delegates commonly used in  
a) Serialization    b) File input/output  
c) Event handling    d) Remoting
- 9) \_\_\_\_\_ property of textbox control is used to display text in the form of \*.  
a) TextMode                      b) PasswordChar c) Password                      d) Text
- 10) Default value for format property for dateTimePicker control is  
a) Long                      b) Short                      c) Custome                      d) Date
- 11) Interval property in Timer control takes values in form of  
a) Second                      b) Minutes                      c) Milliseconds                      d) Microseconds
- 12) \_\_\_\_\_ property of radio button is used to check whether control is true of false.  
a) Checked                      b) RadioValue                      c) RadioStatus                      d) Status
- 13) \_\_\_\_\_ property of openFileDialog control is used to display specific types of files.  
a) FileTypes                      b) Filter                      c) DisplayFiles                      d) DisplayType
- 14) We can add ComboBox item is Menu.  
a) True    b) False

2. Answer the following (any 7) :

14

- 1) What are parts of Assembly ?
- 2) What is use of TextBox ? Explain with example.
- 3) What are types of crystal reports ?
- 4) What is Anonymous delegate ?
- 5) What is LINQ ? Explain which namespace is used for LINQ.
- 6) Explain RadioButton and Checkbox control.
- 7) What is event ?
- 8) Explain different object used in Crystal Report.
- 9) What is Global Assembly Cache ?



3. A) Answer the following (**any 2**) : **10**
- 1) Explain RichTextBox Control with example.
  - 2) Explain LINQ to SQL in detail.
  - 3) Explain CrystalReportViewer control in detail.
- B) Explain Controls in Dialog group with example. **4**
4. Answer the following (**any 2**) : **14**
- 1) Design Windows form for.
    - a) Armstrong Number
    - b) Prime Number
  - 2) What is Delegate ? Explain Multicast Delegates with example.
  - 3) Explain different sections of crystal report.
5. Answer the following (**any 2**) : **14**
- 1) Explain with example different filter and grouping technique used in LINQ.
  - 2) What is Assembly ? Explain how to create and deploy assembly.
  - 3) Explain List class with example.
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