



Seat No.	
----------	--

**F.Y.M.C.A. (Faculty of Engg.) (Part – I) Examination, 2015
FUNDAMENTALS OF COMPUTING ENVIRONMENT**

Day and Date : Tuesday, 5-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

1. Multiple choice questions. 20

- 1) _____ is not input unit device.
a) Scanner b) Camera c) Plotter d) Digitizer
- 2) The notable features like keyboards, monitors, GUI were developed in _____
a) First generation b) Second generation
c) Third generation d) Fourth generation
- 3) _____ is machine independence program.
a) High level language b) Low level language
c) Assembly language d) Machine language
- 4) _____ is not a micro computer.
a) Laptop PCs b) Tablet PCs
c) Desktop PCs d) None of above
- 5) MICR stands for _____
a) Magnetic Ink Character Reader
b) Magnetic Ink Code Reader
c) Magnetic Ink Cases Reader
d) None of these
- 6) The rectangular area of the screen that displays a program, data, and/or information is a _____
a) title bar b) button c) dialog box d) window
- 7) In a computer _____ is capable to store single binary bit.
a) Capacitor b) Flip flop c) Register d) Inductor



- 8) _____ electronic component was made out of semiconductor material.
- a) Vacuum tubes
 - b) Transistors
 - c) ICs
 - d) All of above
- 9) ALU is _____
- a) Arithmetic Logic Unit
 - b) Array Logic Unit
 - c) Application Logic Unit
 - d) None of these
- 10) _____ is not an electronic computer.
- a) ENIAC
 - b) ABC
 - c) UNIVAC
 - d) EDVAC
- 11) The use of mathematical logic for computer programming is also called _____
- a) Physical programming
 - b) Logical programming
 - c) View programming
 - d) Computer programming
- 12) The difference between main memory and secondary storage is that the main memory is _____ and the secondary storage is _____
- a) Temporary, permanent
 - b) Permanent, temporary
 - c) Slow, fast
 - d) None of these
- 13) Machine Level Language is _____
- a) Understood by computer without translation
 - b) Need to compile
 - c) Need to generate binary language
 - d) Need to Interpret
- 14) Programs designed to perform specific tasks is known as _____
- a) system software
 - b) application software
 - c) utility programs
 - d) operating system
- 15) _____ is an item of storage medium in the form of circular plate.
- a) Disk
 - b) CPU
 - c) Printer
 - d) ALU
- 16) _____ is a communication mode that support two-way traffic but in only one direction at a time.
- a) Simplex
 - b) *Half Duplex
 - c) Three Quarter Duplex
 - d) None of these



- 17) _____ memories must be refreshed many times per second.
- a) Static RAM
 - b) Dynamic RAM
 - c) EPROM
 - d) ROM
- 18) _____ memory medium is not used as main memory system.
- a) Magnetic core
 - b) Semiconductor
 - c) Magnetic tape
 - d) Magnetic tape
- 19) _____ network is used to connect a number of computers to each other by cables in a single location.
- a) WAN
 - b) LAN
 - c) MAN
 - d) Both b) and c)
- 20) Multiprogramming systems _____
- a) Are easier to develop than single programming systems
 - b) Execute each job faster
 - c) Execute more jobs in the same time period
 - d) Are used only one large mainframe computers

SECTION – I

2. Short notes (**any 4**) : **20**
- a) Binary arithmetic
 - b) Output unit
 - c) Data scanning devices
 - d) Characteristics of computer
 - e) Work station.
3. Answer the following : **20**
- a) Define computer and explain computer generations in detail.
 - b) Explain positional and non positional number system in detail.
- OR
- b) What are types of computer ? Explain client server computer in detail.



SECTION – II

4. Short notes (**any 4**) : **20**
- a) Semiconductor memory
 - b) Packet switching
 - c) Multiprocessing
 - d) Network types
 - e) Electronic mail.

5. Answer the following : **20**
- a) What is Data Communication ? Explain basic elements of a communication theory.
 - b) Define Internet. Explain uses of internet in detail.

OR

- b) What is operating system ? Explain concept of spooling in detail.
-



Seat No.	
-----------------	--

**F.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
SOFTWARE ENGINEERING**

Day and Date : Friday, 15-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

Marks : 20

1. Choose the correct option :

- 1) The linear sequential model of software development is also known as the
 - a) Fountain model
 - b) Spiral model
 - c) Waterfall model
 - d) None of these
- 2) Prototyping aims at
 - a) End user understanding and approval
 - b) Program logic
 - c) Planning of dataflow organization
 - d) None of the above
- 3) What is the final outcome of the requirements analysis and specifications phase ?
 - a) Drawing the data flow diagram
 - b) The SRS document
 - c) Coding the project
 - d) The user manual
- 4) Which of the following statement/s about SRS is/are true ?
 - a) SRS is written by customer
 - b) SRS is written by a developer
 - c) SRS serves as a contract between customer and developer
 - d) All of the above
- 5) Which question no longer concerns the modern software engineer ?
 - a) Why does computer hardware cost so much ?
 - b) Why does software take a long time to finish ?
 - c) Why does it cost so much to develop a piece of software ?
 - d) Why can't software errors be removed from products prior to delivery ?
- 6) The nature of software applications can be characterized by their information.
 - a) Complexity
 - b) Content
 - c) Determinancy
 - d) Both b) and c)
- 7) The rapid application development model is
 - a) Another name for component-based development
 - b) A useful approach when a customer cannot define requirements clearly
 - c) A high speed adaptation of the linear sequential model
 - d) All of the above
- 8) The spiral model of software development
 - a) Ends with the delivery of the software product
 - b) Is more chaotic than the incremental model
 - c) Includes project risks evaluation during each iteration
 - d) All of the above

P.T.O.



- 9) Identify the types of testing for testing in small
 - a) Unit testing
 - b) System testing
 - c) White box testing
 - d) All of the above
- 10) Which of the following are valid reasons for collecting customer feedback concerning delivered software ?
 - a) Allows developers to make changes to the delivered increment
 - b) Delivery schedule can be revised to reflect changes
 - c) Developers can identify changes to incorporate into next increment
 - d) All of the above
- 11) The entity relationship diagram
 - a) Depicts relationships between data objects
 - b) Depicts functions that transform the data flow
 - c) Indicates how data are transformed by the system
 - d) Indicates system reactions to external events
- 12) The importance of software design can be summarized in a single word
 - a) Accuracy
 - b) Complexity
 - c) Efficiency
 - d) Quality
- 13) Which of the following need to be assessed during unit testing ?
 - a) Algorithmic performance
 - b) Error handling
 - c) Execution paths
 - d) Both b) and c)
- 14) Regression testing should be a normal part of integration testing because as a new module is added to the system new
 - a) Control logic is invoked
 - b) Data flow paths are established
 - c) Drivers require testing
 - d) Both a) and b)
- 15) Bottom-up integration testing has as it's major advantage(s) that
 - a) Major decision points are tested early
 - b) No drivers need to be written
 - c) No stubs need to be written
 - d) Regression testing is not required
- 16) The data dictionary contains descriptions of each software
 - a) Control item
 - b) Data object
 - c) Diagram
 - d) Both a) and b)
- 17) What types of errors are missed by black-box testing and can be uncovered by white-box testing ?
 - a) Behavioural errors
 - b) Logic errors
 - c) Typographical errors
 - d) Both b) and c)
- 18) Which of these techniques is not useful for partition testing at the class level ?
 - a) Attribute-based partitioning
 - b) Category-based partitioning
 - c) Equivalence class partitioning
 - d) State-based partitioning
- 19) Which of the following is not a measurable characteristic of an object-oriented design ?
 - a) Completeness
 - b) Efficiency
 - c) Size
 - d) Volatility
- 20) Software risk always involves two characteristics
 - a) Fire fighting and crisis management
 - b) Known and unknown risks
 - c) Uncertainty and loss
 - d) Staffing and budget



SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) Waterfall model.
 - 2) Role played by system analyst.
 - 3) Functional Decomposition Diagram.
 - 4) Procedural design.
 - 5) Applications of software engineering.
3. A) Explain prototype model and also explain its advantages. **10**
B) Explain the notations of Entity Relationship Diagram with an example. **10**
- OR
- B) Explain decision analysis tools with an example. **10**

SECTION – II

4. Solve **any four** : **(5×4=20)**
- 1) Unit testing.
 - 2) Quality Metrics.
 - 3) Characteristics of maintenance.
 - 4) Alpha and beta testing.
 - 5) Features of modern GUI.
5. A) What is software testing ? Explain white box testing with an example. **10**
B) What is software quality assurance ? Explain need of SQA. **10**
- OR
- B) Explain software designing in detail. **10**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
COMPUTER GRAPHICS WITH MULTIMEDIA (Old)**

Day and Date : Tuesday, 5-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

N.B. : 1) Figures to the **right** indicate **full** marks.
2) Q. 3 A and Q. 5 A are **compulsory**.

1. Multiple choice questions :

20

- 1) Beam penetration technique is commonly used in _____
 - a) Random scan display
 - b) Raster scan display
 - c) Flat panel display
 - d) All of the above
- 2) Maximum number of points that can be displayed without overlap on a CRT is referred as _____
 - a) Plotting
 - b) Resolution
 - c) Screen
 - d) None of the above
- 3) In Bresenham's line drawing algorithm the error term is initially set as _____
 - a) $e = 2\Delta y - 2\Delta x$
 - b) $e = \Delta y - 2\Delta x$
 - c) $e = 2\Delta y - \Delta x$
 - d) $e = \Delta y - \Delta x$
- 4) Aliasing effect is dominant for lines having slope less than _____ or greater than _____ degree.
 - a) $20^\circ, 70^\circ$
 - b) $70^\circ, 20^\circ$
 - c) $40^\circ, 120^\circ$
 - d) $90^\circ, 45^\circ$
- 5) _____ transformation changes size of an object.
 - a) Reflection
 - b) Translation
 - c) Scaling
 - d) Rotation
- 6) In Sutherland and Cohen subdivision line clipping algorithm, if region code for both end points P_1 and P_2 are zero then line is
 - a) Completely invisible
 - b) Partially visible
 - c) Completely visible
 - d) None



- 7) The procedure that identifies the portion of picture that are either or outside a specified region is referred to as _____
- a) viewing
 - b) clipping
 - c) windowing
 - d) none
- 8) An area on a device to which a window is mapped is called
- a) window
 - b) clipping
 - c) viewport
 - d) none
- 9) The scanners use the _____ scanning mechanism to scan the information.
- a) Electrical
 - b) Acoustic
 - c) Optical
 - d) Sunlight
- 10) In Raster scan, when the beam is moved from _____ it is on.
- a) Top to bottom
 - b) Right to left
 - c) Left to right
 - d) All of the above
- 11) _____ is the capability of jumping or navigating from one point within a presentation to another point.
- a) Integrity
 - b) Interactivity
 - c) Non-linearity
 - d) Digital representation
- 12) _____ should be done, to improve the quality of the presentation.
- a) Implementation
 - b) Testing and Feedback
 - c) Flow line
 - d) Writing a script
- 13) RLE stands for _____
- a) Run Length Encoding
 - b) Run Large Encoding
 - c) Run Last Encoding
 - d) Recover Length Encoding
- 14) _____ measures the number of vibration of a particle in one second.
- a) Amplitude
 - b) Speed
 - c) Waveform
 - d) Frequency



- 15) A microphone records sound by converting the acoustic energy to _____ energy.
- a) Electrical
 - b) Mechanical
 - c) Optical
 - d) Light
- 16) MIDI uses special _____ conductor cable to connect the synthesizer ports.
- a) one
 - b) two
 - c) four
 - d) five
- 17) What is true about WAV ?
- a) This format of sound defined by Microsoft
 - b) It is uncompressed file format
 - c) WAV files are quite large
 - d) All of the above
- 18) MPEG stands for _____
- a) Movie Picture Expert Group
 - b) Motion Picture Expert Group
 - c) Motion Pixel Element Group
 - d) None of the above
- 19) NTSC specifies a standard _____
- a) 625 horizontal lines, 30 frames per sec.
 - b) 525 horizontal lines, 25 frames per sec.
 - c) 525 horizontal lines, 30 frames per sec.
 - d) 625 horizontal lines, 25 frames per sec.
- 20) The National Television Systems Committee was set up in the year _____
- a) 1940
 - b) 1950
 - c) 1967
 - d) 1942



2. Write short answer on (**any 4**) : **20**
- 1) Reflection Transformation
 - 2) Viewing Transformation
 - 3) Raster Scan Display
 - 4) Beam Penetration Technique
 - 5) Polygon filling.
3. A) Explain colour CRT monitor. **10**
- B) Explain mid-point subdivision line clipping algorithm with an example. **10**
- OR
- B) What is homogeneous Co-ordinate system ? Explain translation, scaling and rotation with respect to homogeneous co-ordinate system. **10**
4. Write short answer on (**any 4**) : **20**
- 1) Audio file Format
 - 2) Lossy and Lossless Compression
 - 3) EDTV and HDTV
 - 4) Virtual Reality Applications
 - 5) Characteristics of sound.
5. A) Explain different multimedia applications. **10**
- B) What are different elements of audio system ? Explain any one of them. **10**
- OR
- B) What are different Video Broadcasting standards ? **10**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
SYSTEM PROGRAMMING (Old)**

Day and Date : Thursday, 7-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- N. B. :** 1) Figures to the **right** indicate **full** marks.
2) **Q. 3 A** and **Q. 5 A** are **compulsory**.
3) Draw diagram **if necessary**.

1. Multiple choice questions.

20

- 1) The translation model bridges _____ gap by translating the source program in to an equivalent program in machine language.
a) Specification gap b) Execution gap
c) Both a) and b) d) None of the above
- 2) The program generator domain in effect _____
a) Reduces Execution Gap b) Increase Execution Gap
c) Reduces Specification Gap d) Increase Specification Gap
- 3) A forward reference of a program entity is a reference to the entity which _____ it's defination in the program.
a) precedes b) succedes c) in d) none of the above
- 4) _____ of an assembler is one complete scan of the source program or its equivalent representation.
a) phase b) pass c) both a) and b) d) none of the above
- 5) _____ is particularly well-suited if expressions are permitted in the operand fields of an assembly statement.
a) Variant – I b) Variant – II c) Both a) and b) d) None of the above
- 6) The assembler uses the _____ to collect the information concerning references to all symbols in the program.
a) FRT b) CRT c) SRTAB d) MOT



- 7) If the specification of start address is omitted then the execution start address is assumed to be the same as _____
- a) Translated origin
 - b) Linked origin
 - c) Load origin
 - d) Relocated origin
- 8) _____ implies replacement of a character string by another character string during program generation.
- a) Lexical expansion
 - b) Semantic expansion
 - c) Macro expansion
 - d) None of the above
- 9) While processing a statement in the source program, the processor compares the string found in its mnemonic field with _____
- a) Symbol name
 - b) E V Name
 - c) Macro Name
 - d) None of the above
- 10) A unique sequencing symbol is written in the label field of a statement in a _____
- a) Macro prototype
 - b) MEND statement
 - c) Macro definition
 - d) All of the above
- 11) _____ is detected by checking whether the value assigned in an assignment statement is used anywhere in the program.
- a) Dead strength
 - b) Dead code
 - c) Strength code
 - d) Evaluation code
- 12) The data flow concept of _____ is used to implement common subexpression elimination.
- a) expression tree
 - b) available expressions
 - c) both a) and b)
 - d) neither a) and b)
- 13) Recognition of basic syntactic constructs through reductions are carried out in _____
- a) Interpretation
 - b) Syntax analysis
 - c) Lexical analysis
 - d) None of these
- 14) _____ is created by lexical analysis to represent the program as a string of tokens rather than of individual characters.
- a) Identifier table
 - b) Literal table
 - c) Uniform symbol table
 - d) Terminal table



- 15) The _____ merely has to physically load the module into core.
 - a) core loader
 - b) module loader
 - c) binder
 - d) direct linking loader
- 16) _____ is used to specify each external symbol and its assigned value.
 - a) Load map
 - b) Symbol map
 - c) Literal map
 - d) None of these
- 17) A hand coded machine language program and an object module are representative examples of
 - a) non relocatable programs
 - b) relocatable programs
 - c) both a) and b)
 - d) neither a) nor b)
- 18) The _____ accepts specification of the presentation and dialog semantics to produce the presentation and dialog managers of the UI respectively.
 - a) user interface management system
 - b) user interact management system
 - c) user presentation management system
 - d) user dialog management system
- 19) A _____ system provides the user with a visual display of the universe of the application.
 - a) direct manipulation
 - b) command menus
 - c) command languages
 - d) visual menus
- 20) _____ techniques are used to support static analysis of programs.
 - a) Program preprocessing
 - b) Program instrumentation
 - c) Program generation
 - d) Program interpretation

SECTION – I

2. Write short answer on (any 4) :

20

- 1) Intermediate code representation
- 2) Lexical and syntax analysis
- 3) Advanced assembler directives
- 4) A single pass assembler of 8088
- 5) Macro with mixed parameters.



3. A) Explain in brief language processor development tools. **10**
B) Compare and contrast variant – I and variant – II intermediate code for imperative statements. **10**

OR

- B) Write and explain an algorithm for Pass – II of an assembler. **10**

SECTION – II

4. Write short note on (**any 4**) : **20**
- 1) Triples and quadruples
 - 2) Optimization
 - 3) Object module
 - 4) Dynamic linking
 - 5) Command Dialogs.

5. A) Explain 'The Cornell Program Synthesizer' in detail. **10**
B) 'A side effect of a function call is a change in the value of a variable which is not local to the called function'. Explain. **10**

OR

- B) What is loader ? Explain subroutine linkages with example. **10**
-



Seat No.	
-------------	--

S.Y. M.C.A. (Faculty of Engg.) (Part – I) Examination, 2015
COMPUTER ORGANIZATION AND ARCHITECTURE (Old)

Day and Date : Saturday, 9-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

Instructions : 1) Figures to the **right** indicate **full marks**.
2) **Q.3. A and Q.5. A are compulsory.**

1. Choose the correct answer : **20**
- 1) _____ included with devices to hold data during data transfer.
a) Buffer Register b) Data Register
c) Segment Register d) Code Register
 - 2) The concept of VLSI evolved in the _____ generation.
a) First b) Second c) Third d) Fourth
 - 3) The number of bits in each word is often referred to as the
a) Word count b) Word length
c) Word Size d) None of the above
 - 4) UNIVAC stands for
a) Universal Automatic Computing b) Unique Automatic Computer
c) Universal Automatic Computer d) None of the above
 - 5) Pentium computer systems are
a) CISC b) RISC
c) Both a & b d) None of the above
 - 6) Memory Address Register stores the _____ of the location to be accessed.
a) Data b) Address
c) Effective Address d) None of the above



- 7) Booth algorithm is used for
- a) Signed Number
 - b) Unsigned Number
 - c) Both a & b
 - d) None of the above
- 8) _____ stream flowing from memory to the processor.
- a) Data
 - b) Segment
 - c) Instruction
 - d) Address
- 9) The microroutine for all instructions of instruction set are stored in a special memory called
- a) Control store
 - b) Central store
 - c) Tag memory
 - d) Memory block
- 10) An _____ field specifies the operation to be performed.
- a) Operand
 - b) Operation code
 - c) Operand code
 - d) Function
- 11) Which memory is difficult to interface with processor ?
- a) Static memory
 - b) Dynamic memory
 - c) ROM
 - d) None of these
- 12) Which of the following is/are advantages of virtual memory ?
- a) Faster access to memory on an average
 - b) Processes can be given protected address spaces
 - c) Programmes larger than the physical memory size can be run
 - d) All of these
- 13) Memory refreshing may be done
- a) By the CPU that contain a special refresh counter only
 - b) By an external refresh controller only
 - c) Either by the CPU or by an external refresh controller
 - d) None of these



- 14) What is the correct sequence of time delays that happen during a data transfer from a disk to memory ?
- a) Seek time, access time, transfer time
 - b) Access time, latency time, transfer time
 - c) Seek time, latency time, transfer time
 - d) Latency time, access time, transfer time
- 15) Pipeline implement
- a) fetch instruction
 - b) decode instruction
 - c) execute instruction
 - d) all of these
- 16) Interrupts which are initiated by an I/o drive are
- a) Internal
 - b) External
 - c) Software
 - d) All
- 17) _____ cause the IOP to fetch the next CCW from the specified memory address rather than from the next sequential location.
- a) Location counter
 - b) Branch instruction
 - c) Signals
 - d) None of these
- 18) _____ aims at speeding up the single processor p(1) and can increase performance only by a factor of 10 or 50.
- a) Instruction level parallelism
 - b) Single level parallelism
 - c) Processor level parallelism
 - d) Multiple level parallelism
- 19) The term _____ is also used for distributed memory computer.
- a) message passing computer
 - b) personal computer
 - c) developed computer
 - d) controlled computer
- 20) If the access time to the shared memory is the same for each processor, the multiprocessor is said to be of the _____ type.
- a) DMA (Direct Memory Access)
 - b) Uniform-memory access
 - c) Local memory access
 - d) None of these



SECTION – I

2. Write short answer on **(any four)** : **20**
- 1) Functional units of computer.
 - 2) Bus structure.
 - 3) Instruction format.
 - 4) CPU organization.
 - 5) Unsigned Multiplication.
3. A) Explain different addressing modes. **10**
- B) Explain in brief CISC & RISC processor characteristics. **10**
- OR
- B) Explain microprogrammed control unit. **10**

SECTION – II

4. Write short answer on **(any 4)** : **20**
- 1) Translation Lookaside buffer.
 - 2) Memory hierarchy.
 - 3) Single line interrupt system.
 - 4) Triple modular redundancy.
 - 5) Cache coherence.
5. A) Explain DMA in detail. **10**
- B) Write difference with example of associative mapping and set-associative mapping. **10**
- OR
- B) What is parallel processing ? Explain its classification. **10**
-



Seat No.	
-------------	--

**S.Y.M.C.A. (Faculty of Engg.) (Part – I) Examination, 2015
RELATIONAL DATABASE MANAGEMENT SYSTEM (Old)**

Day and Date : Tuesday, 12-5-2015
Time : 3.00 p.m. to 6.00 p.m

Max. Marks : 100

- N.B.** : 1) Figures to the **right** indicate **full** marks.
2) **Q.3** and **Q.5** are **compulsory**.
3) To the **point** answer carry **full** marks.

1. Multiple choice questions :

20

- 1) A primary key, if combined with a foreign key creates
 - A) Parent-child relationship between the tables that connect them
 - B) Many to many relationship between the tables that connect them
 - C) Network model between the tables connect them
 - D) None of these
- 2) Pick odd man out (set difference)
 - A) UNION
 - B) INTERSECTION
 - C) EXCEPT or SET DIFFERENCE
 - D) BETWEEN
- 3) _____ which express the number of entities to which another entity can be associated via relationship set.
 - A) Column cardinalities
 - B) Mapping cardinalities
 - C) Rows cardinalities
 - D) Mapping columns
- 4) Trigger is a
 - A) Statement that enables to start any DBMS
 - B) Statement that executed by the user when debugging an application program
 - C) Condition the system tests for the validity of the database user
 - D) Statement that is executed automatically by the system as a side effect of a modification to the database



5) If P and Q are predicate and P is the relational algebra expression, then which of the following equivalence are valid ?

(Note : σ indicate SELECT operation)

A) $\sigma_P (\sigma_Q (e)) = \sigma_Q (\sigma_P (e))$

B) $\sigma_P (\sigma_Q(e)) = \sigma_{P \wedge Q}(e)$

C) $\sigma_Q(\sigma_P (e)) = \sigma_{P \wedge Q}(e)$

D) All of these

6) Pick odd man out (Query by example)

A) Skeleton table

B) Result relation

C) Condition box

D) Authentication

7) Two tables may be joined into a third tables if they have

A) Row in common

B) Field in common

C) No records with the same value in the common field

D) Both B) and C)

8) Data integrity control

A) is used to set upper and lower limit on numeric data

B) requires the use of password to prohibit unauthorized access to the files data

C) has the data dictionary to keep the data and time of last access, last break-up and most recent modification for all data

D) none of these

9) In the relational model, relationship between relations or tables are created by using

A) Composite key

B) Determinants

C) Candidate key

D) Foreign key

10) Which of the following is not a restriction for a table to be a relation

A) The cells of the table must contain a single value

B) All of the entries in any column must contain same kind value

C) No two rows in a table may be identical

D) The columns must be ordered



- 11) RAID 1 stands for
 - A) Mirroring
 - B) Non-redundant stripping
 - C) P+ Q redundancy
 - D) Block level stripping
- 12) An expression can be evaluated by the means of _____ where the system computes the result of each subexpression and stores it on disk and then uses it to compute the result of parent expression.
 - A) Pipelining
 - B) Materialization
 - C) RAID
 - D) Hashing and Indexing
- 13) In organization of record in file, a _____ file organization stores related records of two or more relations in each block.
 - A) Multitable clustering
 - B) Sequential
 - C) Fixed
 - D) b) and c) both
- 14) The media magnetic tape and optical disk jukeboxes are referred to as _____ storage.
 - A) Tertiary
 - B) Offline
 - C) Primary
 - D) A) and B) both
- 15) Flash memory is a form of
 - A) ROM
 - B) PROM
 - C) EEPROM
 - D) None of these
- 16) The first _____ was developed by ARPANET.
 - A) LAN
 - B) MAN
 - C) WAN
 - D) ZAN
- 17) _____ tree eliminates the redundant storage of search key values.
 - A) B
 - B) B+
 - C) AVLX
 - D) TMT
- 18) In transformation, two relational algebra expressions are said to be _____ if, on every legal database instance, the two expressions generate the same set of tuples.
 - A) Equivalent
 - B) Different
 - C) Seldom
 - D) None of these
- 19) Pick odd man out (Index)
 - A) Sparse
 - B) Dense
 - C) Secondary
 - D) Centralized
- 20) Pick odd man out (Database system architecture)
 - A) Centralized
 - B) Parallel
 - C) Distributed
 - D) Hashing



2. Write short answer on (**any 4**) : **(5×4=20)**
- i) Aggregate function
 - ii) Complex queries
 - iii) Extended ER features
 - iv) Set operations
 - v) Structure of relational database.

3. a) What is view ? Explain DDL, DML and DQL operations performed on view. **10**
- b) What is join ? Explain Inner and outer join with example. **10**

OR

- b) Define ERD. Explain any seven notation with example.

4. Write short notes on (**any four**) : **(5×4=20)**
- a) Decomposition
 - b) Magnetic Disk
 - c) Measures of query cost
 - d) Distributed system
 - e) Data dictionary.

5. a) What is normalization ? Explain 3NF, BCNF and 4NF with example. **(10×1=10)**
- b) What is parallel system ? Explain shared nothing, shared disk and shared memory architecture in brief. **(10×1=10)**

OR

- b) What is hashing ? Explain static and dynamic hashing with example. **(10×1=10)**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
COMPUTER ALGORITHMS**

Day and Date : Thursday, 14-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions : 1) Q. 3 (a) and Q. 5 (a) are **compulsory**.
2) Figures to the **right** indicate **full marks**.

1. Choose correct alternative : **20**
- 1) Algorithm that always produces different output at run to run is known as
 - a) Las Vegas
 - b) Monte Carlo
 - c) Recursive
 - d) NP Hard
 - 2) Time complexity of Las vegas algorithm is
 - a) $O(n/2)$
 - b) $O(\log n)$
 - c) $O(n^2)$
 - d) $O(n)$
 - 3) Time complexity of binary search in worst case is
 - a) $O(1)$
 - b) $O(\log n)$
 - c) $O(n \log n)$
 - d) $O(n^2)$
 - 4) When 3 coins are tossed the probability of getting 2 heads is
 - a) $3/8$
 - b) $4/8$
 - c) $7/8$
 - d) None of these
 - 5) If E_1 is the probability of getting all heads and E_2 is the probability of getting all tails the E_1 and E_2 are _____
 - a) Mutually exclusive
 - b) Mutually not exclusive
 - c) Independence
 - d) Binomial
 - 6) If $n = 4$, $p_1, p_2, p_3, p_4 = (10, 15, 20, 24)$ and $d_1, d_2, d_3, d_4 = (2, 1, 2, 1)$ then which of the following is not feasible solution ?
 - a) 1, 2
 - b) 1, 3
 - c) 2, 4
 - d) 3, 4



7) In the optimal merge pattern a leaf node is called

- a) E-node
- b) Inode
- c) Dead node
- d) none of these

8) A Preemptive optimal finish time of Matrix $\begin{vmatrix} 2 & 0 \\ 3 & 3 \\ 3 & 4 \end{vmatrix}$ In flow shop scheduling is

- a) 11
- b) 12
- c) 14
- d) 8

9) _____ is loosely defined as Syntactically or semantically meaningful segment of a problem

- a) Pseudo code
- b) Recursive algorithm
- c) Deterministic algorithm
- d) None of these

10) In algorithm arrays and records are passed by

- a) Value
- b) References
- c) Type
- d) Recursion

11) An element w in a commutative ring is called a _____ root of unity.

- a) Fourier
- b) Quadratic
- c) Lagrange's
- d) None of these

12) In branch and bound c(x) is a

- a) Upper bound of x
- b) Lower bound of x
- c) Dominance relation
- d) Cost of a tree x

13) _____ is used by electrical engineer in a variety of ways including speech transmission, coding theory and image processing.

- a) NFFT
- b) FFT
- c) EXEuclid
- d) Modular arithmetic

14) Transforming tuples if product A(x).B(x) into polynomial is known as

- a) Evaluation
- b) Interpolation
- c) Algebraic transformation
- d) None of these

15) Which of the following is the application of BFS ?

- a) To obtain spanning tree for undirected graph
- b) To calculate radius of a tree
- c) To calculate diameter of a tree
- d) To obtain traversal technique of a graph



- 16) Greatest common divisor of (21, 13) is
- a) 2
 - b) 1
 - c) 7
 - d) 13
- 17) Following of the statement is correct if $ab^{-1} \text{ mode } p=r$
- a) Unique remainder where ab^{-1} is divided by p
 - b) Where p is double precision prime number
 - c) r is sparse representation of the multiplicative inverse
 - d) p is known as ExEuclid field
- 18) In Algebraic transformation the _____ begins by rearranging the Input to place correct values in its proper position.
- a) FFT
 - b) In place FFT
 - c) NFFT
 - d) In place NFFT
- 19) The _____ rule first requires the expansion of all live node generated before their expansion of its child.
- a) LIFO
 - b) FIFO
 - c) LC
 - d) D search
- 20) The 15 puzzle problem can be solved by using
- a) Back tracking
 - b) Branch and Bound
 - c) Traversal and search
 - d) None of these

SECTION – I

2. Write short note on (**any 4**) : **20**
- 1) Distinct areas to study an algorithm.
 - 2) Worst case, best case and average case time complexity.
 - 3) Algorithm for recursive binary search.
 - 4) Job Sequencing algorithm.
 - 5) Strassen's Matrix multiplications.
3. Answer the following : **20**
- a) Let $X = a, a, b, a, a, b, a, b, a, a$ and $Y = b, a, b, a, a, b, a, b$. Find a minimum cost edit sequence that transform X into Y. (Cost to insert and delete is one unit and for change 2 units).



b) Explain Quick hull algorithm and grahams scan algorithm in detail.

OR

b) Write an algorithm for two way merge pattern and explain its working with suitable example.

SECTION – II

4. Write short note on (**any 4**) : **20**

- 1) Scheme to construct a bi-connected graph.
- 2) Static and dynamic state space tree.
- 3) LC Branch and Bound.
- 4) b^{-1} multiplication modulo 7.
- 5) Evaluation and interpolation.

5. Answer the following : **20**

- a) Explain Algorithm of BFS and BFT with help of stack.
- b) Explain Even Faster evaluation and interpolation with help of algorithm.

OR

b) Explain Traveling sales persons problem with the help of example.



Seat No.	
----------	--

**S.Y. M.C.A. (Under Faculty of Engg.) (Part – I) (New) Examination, 2015
DATA STRUCTURE**

Day and Date : Tuesday, 5-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions : 1) Draw diagram *wherever* necessary.
2) Figures to the *right* indicate **full** marks.

MCQ/Objective Type Questions

1. Multiple Choice questions :

20

- 1) A mathematical-model with a collection of operations defined on that model is called
 - a) Data Structure
 - b) Abstract Data Type
 - c) Primitive Data Type
 - d) Algorithm
- 2) Two main measures for the efficiency of an algorithm are
 - a) Processor and memory
 - b) Complexity and capacity
 - c) Time and space
 - d) Data and space
- 3) The process of writing one operator of an expression either before their operands or after them is called
 - a) Polish Notation
 - b) BODMAS
 - c) Asymptotic Notation
 - d) Both a) and b)
- 4) In _____ searching the records must be sorted.
 - a) Linear search
 - b) Hashing
 - c) Binary search
 - d) None of above
- 5) In _____ sorting some data has to be kept in auxiliary memory.
 - a) Internal
 - b) External
 - c) Pre emptive
 - d) Bridge
- 6) The complexity of merge sort algorithm is
 - a) $O(n)$
 - b) $O(\log n)$
 - c) $O(n^2)$
 - d) $O(n \log n)$



- 7) The difference between linear array and a record is
- a) An array is suitable for homogeneous data but the data items in a record may have different data type
 - b) In a record, there may not be a natural ordering in opposed to linear array.
 - c) A record form a hierarchical structure but a linear array does not
 - d) All of above
- 8) Each instruction of an algorithm must be clear and unambiguous is known as
- a) Finiteness
 - b) Definiteness
 - c) Effectiveness
 - d) Perfectness
- 9) Identify the data structure which allows insertion at both ends of the list but deletion at only one end
- a) Input-restricted deque
 - b) Output-restricted deque
 - c) Priority queues
 - d) None of above
- 10) The space factor when determining the efficiency of algorithm is measured by
- a) Counting the maximum memory needed by the algorithm
 - b) Counting the minimum memory needed by the algorithm
 - c) Counting the average memory needed by the algorithm
 - d) Counting the maximum disk space needed by the algorithm
- 11) When converting binary tree into extended binary tree, all the original nodes in binary tree are
- a) internal nodes on extended tree
 - b) external nodes on extended tree
 - c) vanished on extended tree
 - d) none of above
- 12) The children of same parent is called
- a) Ancestor
 - b) Descendents
 - c) Terminal nodes
 - d) None of these
- 13) A graph which does not have a cycle is called
- a) Non cyclic graph
 - b) Acyclic graph
 - c) Unconnected graph
 - d) None of the above



- 14) _____ is used for computer representation of a graph.
- a) Adjacency matrix
 - b) Adjacency list
 - c) Both a) and b)
 - d) None of above
- 15) _____ technique uses stack for traversing all the nodes of the graph.
- a) DFS
 - b) BFS
 - c) Warshall
 - d) Both a) and b)
- 16) _____ is used for finding shortest path between two nodes.
- a) Stack
 - b) Queue
 - c) Binary Tree
 - d) Graph
- 17) If every node u in G is adjacent to every other node v in G , A graph is said to be
- a) isolated
 - b) Complete
 - c) Finite
 - d) Strongly connected
- 18) Which of the following technique is used to resolve the collision ?
- a) Truncation
 - b) Folding
 - c) Linear probing
 - d) None of above
- 19) Which of the following is not a hashing method ?
- a) Truncation Method
 - b) Folding Method
 - c) Clustering Method
 - d) Mid Square Method
- 20) The pointer in the index table points to the first record of each data block, which is known as the
- a) Primary record
 - b) Secondary record
 - c) Anchor record
 - d) None of above

SECTION – I

2. Write short Note on (any 4) :

20

- A) Array and their types
- B) Convert the following infix expression to postfix :
 - i) $(A + B - C) * (D - E) / (F - G + H)$
 - ii) $(A + B) / C * D - E$.
- C) Merge Sort
- D) Evaluate the expression : $4, 5, 4, 2, \wedge, +, *, 2, 2, \wedge, 9, 3, /, *, -$
- E) Representation of Polynomial using Linked List.



3. A) Write a program to implement insert and delete operations on doubly linked list.

OR

- A) Write a program to dynamically implement Stack Data Structure. **10**
B) What is Dequeue ? Explain its types with example. **10**

SECTION – II

4. Write short note on (**any 4**) : **20**

- A) Indexing
B) Binary Search Tree
C) BFS
D) Heap Sort
E) Closed Hashing.

5. A) Define Graph ? Explain representation of Graph using Adjacency matrix and Adjacency list. **10**

OR

- A) Write recursive functions for in-order and pre-order tree traversals.
B) Explain Huffman's algorithm with example. **10**
-



Seat No.	
---------------------	--

S.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
SYSTEM PROGRAMMING (New)

Day and Date : Thursday, 7-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

Instructions: 1) *Q. 1 is compulsory.*
2) *Figures to the right indicate full marks.*

1. Choose correct alternatives : **20**

- 1) _____ analysis processes the tokens for a statements to determine it's grammatical structure.
a) Lexical b) Semantic
c) Syntax d) None of these
- 2) _____ rules govern formation of valid statement in the source language.
a) Lexical b) Analytical c) Syntax d) Synthesis
- 3) _____ aims at bridging the execution gap by organizing execution of a program written in a programming language on a computer system.
a) Program execution activity b) Linker
c) Program counter d) Reserve pointer
- 4) A _____ entry contains the field's symbol, address and length.
a) POOLTAB b) LITTAB c) OPTAB d) SYMTAB
- 5) Memory allocation is performed by using a data structure called _____
a) Location counter b) Memory counter
c) Collocation counters d) None of these
- 6) An _____ statement indicates an action to be performed during the execution of the program.
a) Imperative b) Expression
c) Both a) and b) d) None of these



- 7) A _____ in a program consists of the name of the macro, a set of formal parameters and body of code that defines a new operation or a new method of declaring data.
- a) Macro substitution
 - b) Lexical substitution
 - c) Macro definition
 - d) Macro call
- 8) A _____ statement is a statement from which an assembly language statement may be generated during macro expansion.
- a) Code
 - b) Model
 - c) Semantic
 - d) None of these
- 9) The problem of forward refers is tackled by using a technique called _____
- a) Forward patching
 - b) Backtracking
 - c) Forward tracking
 - d) Back patching
- 10) _____ substitution is used to generate an assembly statement from a model statement.
- a) Lexical
 - b) Macro
 - c) Assembler
 - d) None of these
- 11) _____ is a binding performed during the program execution.
- a) Static binding
 - b) Dynamic binding
 - c) Both a) and b)
 - d) None of the above
- 12) The _____ is a system program that combines the target code produced by a language translator with codes of other programs and routine from library.
- a) Editor
 - b) Loader
 - c) Linker
 - d) All of the above
- 13) The _____ of a language determine the parts of a program over which a variable may be accessed.
- a) Public specification
 - b) Private specification
 - c) Scope rules
 - d) None of the above
- 14) _____ address assigned by the translator while producing a object program.
- a) Translator origin
 - b) Linked origin
 - c) Load origin
 - d) All of the above



- 15) A debug monitor helps in localization of errors by allowing a programmer to halt execution of a program at interesting point to detect bugs and diagnose their cause.
- a) Compiler
 - b) Debug monitor
 - c) Both a) and b)
 - d) None of the above
- 16) Debug monitor provides the facility _____
- a) Assign a new value to variables
 - b) Display of variables value
 - c) Both a) and b)
 - d) None of the above
- 17) A _____ definition is a symbol defined in the program that may be referred to in other program.
- a) Public
 - b) Private
 - c) External
 - d) None of the above
- 18) Software tools are _____
- a) Program generators
 - b) Program compiler
 - c) Both a) and b)
 - d) None of the above
- 19) The code which can be omitted from a program without affecting its results is called _____
- a) Redundant code
 - b) Block of code
 - c) Dead code
 - d) None of the above
- 20) _____ is a user interface management system.
- a) Menulay
 - b) Hyper card
 - c) Window OS
 - d) All of the above

SECTION – I

2. Write short note on (any 4) :

20

- 1) Variant I and II of assembler
- 2) Program execution activity
- 3) Simple assembly scheme
- 4) Nested macro call
- 5) Pass structure of macro assembler.



3. A) Explain advance macro facility in detail. **10**
B) Give overview of language processor in detail. **10**

OR

- B) Explain single pass assembler for IBM PC. **10**

SECTION – II

4. Write short answer on (**any 4**) : **20**

- 1) Lexical and syntax analysis of source program
- 2) Program debug monitor
- 3) Program relocation
- 4) Loader schemes
- 5) Cray MPP linker.

5. A) Explain in detail machine independent loader features. **10**
B) Explain different types of loader schemes. **10**

OR

- B) Describe static and dynamic storage allocation. **10**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Faculty of Engg.) (Part – I) (New) Examination, 2015
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Saturday, 9-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks :100

Instructions : 1) Figure to the **right** indicate **full** marks.
2) Q. 3. a) and Q. 5. a) are **compulsory**.

1. MCQ/Objective type question paper 20
- 1) What is the function of memory address register ?
 - a) The register that holds an address for the memory unit
 - b) The register that holds data
 - c) The register that holds an address of the data
 - d) The register that holds an address of program counter
 - 2) When the CPU detects an interrupt, it then saves its _____
 - a) Previous state
 - b) Next state
 - c) Current state
 - d) Both a) and b)
 - 3) The CPU instructions are represented in _____ code.
 - a) Decimal
 - b) Binary
 - c) Octal
 - d) Hexa-decimal
 - 4) The external memory systems are accessible by the CPU through _____
 - a) ALU
 - b) Control unit
 - c) I/O module
 - d) DMA
 - 5) _____ registers can be assigned to a variety of functions by the programmer.
 - a) Data
 - b) General purpose
 - c) Address
 - d) Control



- 6) The unit which decodes and translates each instruction and generates the necessary enable signals for ALU and other units is called_____
- a) Arithmetic unit b) Logical unit
c) Control unit d) CPU
- 7) The decoded instruction is stored in _____
- a) IR b) PC c) Registers d) MDR
- 8) We usually refer to each of the interface of the external device as a _____
- a) Socket b) Port c) Input d) Output
- 9) The instructions like MOV or ADD are called as _____
- a) OP-Code b) Operators
c) Commands d) None of the above
- 10) _____ memory systems are directly accessible by the CPU.
- a) RAM b) Floppy c) Hard disk d) CD ROM
- 11) Devices that are under the direct control of the computer are said to be connected _____
- a) Direct b) Indirect c) Online d) Offline
- 12) In I/O interface, a _____ command is issued to activate the peripheral and inform it what to do ?
- a) Control b) Status c) Data output d) Data input
- 13) In _____ data transfer, the registers in the interface share a common clock with the CPU registers.
- a) Synchronous b) Asynchronous
c) Serial d) Parallel
- 14) In handshaking data transfer method, the source unit starts the transfer by placing the data on the bus and enabling _____ signal.
- a) Data accepted b) Data present
c) Data valid d) Data invalid



- 15) _____ is used to increase the speed of processing by making current programs and data available to the CPU at a rapid rate.
 - a) Main memory
 - b) Auxiliary memory
 - c) Tertiary memory
 - d) Cache memory
- 16) The _____ RAM consists of internal flip-flops that store binary information
 - a) Static
 - b) Dynamic
 - c) Primary
 - d) MOS
- 17) A memory unit having a storage capacity of 256 bits requires _____ number of address bits.
 - a) 6
 - b) 7
 - c) 8
 - d) 9
- 18) A memory unit accessed by content is called _____ memory.
 - a) Primary
 - b) Dynamic
 - c) Static
 - d) Associative
- 19) In pipelining, each _____ consists of an input register followed by a combinational circuit.
 - a) Pipe
 - b) Unit
 - c) Segment
 - d) Stream
- 20) A _____ divides an arithmetic operation into sub-operations for execution in the pipeline segments.
 - a) Arithmetic pipeline
 - b) Instruction pipeline
 - c) Floating point pipeline
 - d) None of these

SECTION – I

2. Write short note on (any 4) :

20

- a) Addressing modes
- b) Mapping of instruction
- c) Program interrupts
- d) Memory stack
- e) Instruction codes.



3. Answer the following : 20
- a) Explain memory reference instructions in detail.
 - b) What is CPU ? Explain general register organization.
- OR
- b) Explain RISC and CISC characteristics in detail.

SECTION – II

4. Attempt **any four** : 20
- a) Explain the need for I/O interface.
 - b) Write a short note on isolated versus memory mapped I/O).
 - c) Explain memory hierarchy.
 - d) Explain associative memory using a proper diagram.
 - e) Write a short note on processor with multiple functional units.
5. A) Explain DMA transfer in a computer system using a proper diagram. 10
- B) Explain the concept of segmented page mapping. 10
- OR
- B) Explain arithmetic pipelining using an example. 10
-



Seat No.	
-------------	--

**S.Y.M.C.A. (Faculty of Engg.) (Part – I) (New) Examination, 2015
COMPUTER NETWORKS**

Day and Date : Tuesday, 12-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions: 1) *To the point answer carries weightage.*
2) *Q. 3 a) and Q. 5 a) are compulsory.*

1. MCQ/Objective Type Question Paper : 20

- 1) In OSI network architecture, the dialogue control and token management are responsibility of _____
 - A) session layer
 - B) network layer
 - C) transport layer
 - D) data link layer

- 2) The process of converting analog signals into digital signals so they can be processed by a receiving computer is referred to as _____
 - A) modulation
 - B) demodulation
 - C) synchronizing
 - D) digitizing

- 3) The x.25 standard specifies a _____
 - A) technique for start-stop data
 - B) technique for dial access
 - C) DTE/DCE interface
 - D) data bit rate

- 4) _____ applications allow a user to access and change remote files without actual transfer.
 - A) DNS
 - B) FTP
 - C) Telnet
 - D) NFS

- 5) The _____ layer of OSI model can use the trailer of the frame for error detection.
 - A) Physical
 - B) Data link
 - C) Transport
 - D) Presentation

- 6) _____ is the logical topology.
 - A) Bus
 - B) Tree
 - C) Star
 - D) Both A) and B)



- 7) Transmission Lines are also called as _____
- A) Circuits
 - B) Channels
 - C) Trunks
 - D) Circuits channels, or trunks
- 8) Data Link Control Protocol (HDLC) is implement at the _____
- A) Data link layer
 - B) Network layer
 - C) Transport layer
 - D) None
- 9) _____ is the process of dividing a link, the physical medium, into logical channels for better efficiencies.
- A) Simplex
 - B) Multiplexing
 - C) Half-Duplex
 - D) Full Duplex
- 10) The _____ layer provides a well defined service interface to the network layer, determining how the bits of the physical layer are grouped into frames.
- A) Data link
 - B) Physical
 - C) Network
 - D) Session
- 11) SNMP is abbreviation of
- A) Simple Network Protocol layer
 - B) Simple Network Management Protocol
 - C) Simple Network Marking Protocol
 - D) None
- 12) IPv6 addressed has a size of
- A) 32 bits
 - B) 64 bits
 - C) 128 bits
 - D) 265 bits
- 13) Which one of the following is not an application layer protocol used in internet ?
- A) Resource reservation protocol
 - B) Internet relay chat
 - C) Remote procedure call
 - D) None



- 14) In asymmetric key cryptography, the private key is kept by
- A) Receiver
 - B) Sender
 - C) Sender and receiver
 - D) All the connected devices to the network
- 15) The _____ translates internet domain and host names to IP address.
- A) Internet relay chat
 - B) Routing information protocol
 - C) Network time protocol
 - D) Domain name system
- 16) Which one of the following is a version of UDP with congestion control ?
- A) Structured stream transport
 - B) Stream control transmission protocol
 - C) Datagram congestion control protocol
 - D) None
- 17) The Contention is
- A) The condition occurring when two or more stations attempt simultaneous channel access
 - B) A carrier signal that can be modulated
 - C) Transmission of packets to all nodes
 - D) None
- 18) EDI is abbreviation of
- A) Electronic Digital Image
 - B) Electronic Data Interchange
 - C) Email Data Interchange
 - D) None
- 19) The combination of the IP address and the port number, called the socket address, defines
- A) Application
 - B) Network
 - C) Topology
 - D) A process and a host
- 20) _____ name space is made of several parts.
- A) Flat
 - B) Hierarchical
 - C) Mix
 - D) None



SECTION – I

2. Write short note on (**any 4**) : **20**
- a) Switched Ethernet
 - b) Virtual LAN
 - c) Persistent and non-persistent
 - d) Electromagnetic spectrum
 - e) Cable television.
3. Answer the following : **20**
- a) Explain channel allocation problem in detail.
 - b) Explain OSI reference model in detail.
- OR
- b) Explain Connection oriented and connectionless services in detail.

SECTION – II

4. Write short note on (Attempt **any 4**) : **(4×5=20)**
- 1) Network Layer Design Issues
 - 2) Transport Service Primitives
 - 3) Firewall
 - 4) Domain Name in internet
 - 5) UDP.
5. Write Long Answer :
- a) Explain SNMP with SMI and MIB ? **10**
 - b) Explain symmetric key and asymmetric key cryptography in detail. **10**
- OR
- c) Explain TCP Protocol and its Segment format in detail. **10**
-



Seat No.	
-------------	--

**F.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
PROGRAMMING IN C**

Day and Date : Thursday, 7-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instructions : 1) *Draw diagram wherever necessary.*
2) *Figures to the right indicate full marks.*

1. Multiple choice question :

20

- 1) The C language consists of _____ number of keywords.
 - a) 32
 - b) 40
 - c) 24
 - d) 56
- 2) By default a function returns a value of type
 - a) int
 - b) char
 - c) void
 - d) none of these
- 3) Which is not keyword in 'C' ?
 - a) typedef
 - b) const
 - c) near
 - d) complex
- 4) How will you free the allocated memory ?
 - a) remove(var-name);
 - b) free(var-name);
 - c) delete(var-name);
 - d) dalloc(var-name);
- 5) Which of the following mode argument is used to truncate ?
 - a) a
 - b) f
 - c) w
 - d) t
- 6) We can not use break directly with
 - a) for
 - b) while
 - c) do while
 - d) if



- 7) The maximum combined length of the command-line arguments including the spaces between adjacent arguments is
- a) 128 characters
 - b) 256 characters
 - c) 67 characters
 - d) It may vary from one operating system to another
- 8) Which of the following is correct usage of conditional operator used in C ?
- a) `a>b?c=30:c=40;`
 - b) `a>b?c=30;`
 - c) `max=a>b?a>c?a:c:b>c?b:c;`
 - d) All of the above
- 9) Which bitwise operator is suitable for turning off a particular bit in a number ?
- a) `&&` operator
 - b) `&` operator
 - c) `||` operator
 - d) `!` operator
- 10) Address stored in pointer variable is of type _____
- a) string
 - b) integer
 - c) floating
 - d) character
- 11) Which of the following are C preprocessors ?
- a) `#ifdef`
 - b) `#define`
 - c) `#endif`
 - d) all of the mentioned
- 12) Which operator is used to connect structure name to its member name ?
- a) logical operator(`&&`)
 - b) dot operator(`.`)
 - c) pointer operator(`&`)
 - d) arrow operator(`->`)
- 13) A program that has no command line arguments will have `argc`
- a) zero
 - b) negative
 - c) one
 - d) two
- 14) How many types of relational operator in C ?
- a) 5
 - b) 6
 - c) 7
 - d) 8
- 15) Which of the following correctly shows the hierarchy of arithmetic operations in C ?
- a) `/ + * % -`
 - b) `* - % / +`
 - c) `+ - /*%`
 - d) `* / % + -`



16) Output of the following program

```
#include <stdio.h>
int main ()
{
  Unsigned char i = 0X80;
  printf(“%d\n”,i<<1);
  return 0;
}
```

- a) 0
- b) 256
- c) 100
- d) None of the above

17) Which is true about getc returns ?

- a) The next character from the stream referred to by file pointer
- b) EOF for end of file or error
- c) Both a) and b)
- d) Nothing

18) Pointer variable declared using proceeding sign _____

- a) ^
- b) *
- c) %
- d) &

19) The recursive function executed in a _____

- a) Parallel order
- b) Random order
- c) Last in first out order
- d) First in first in order

20) In which header file null macro defined ?

- a) stddef.h
- b) stdio.h
- c) stdio.h and stddef.h
- d) math.h

SECTION – I

2. Write a short note on (any 4) :

20

- I) Pointer arithmetic
- II) Dynamic memory allocation
- III) Data types
- IV) Flow chart
- v) Looping statement.



3. a) What is an array ? Explain types of array with example. **10**
- b) Explain concept of Pointers and arrays. Write a program using pointers to compute the sum of all elements stored in an array ? **10**

OR

- b) Write a program to print the following format. **10**

1

1 2

1 2 3

1 2 3 4

SECTION – II

4. Write a short note on **(any 4)** : **20**
- I) Text Vs Binary Files
 - II) Recursion with example
 - III) Storage classes
 - IV) 'C' preprocessor
 - V) Error handling during I/O operations.

5. a) Explain the difference between call by value and call by reference with example. **10**
- b) Write a program that appends one file at the end of another. **10**

OR

- b) What is command line argument ? Demonstrate with example. **10**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Part – I) (New) (Under Faculty of Engg.) Examination, 2015
COMPUTER GRAPHICS**

Day and Date : Thursday, 14-5-2015

Total Marks : 100

Time : 3.00 p.m. to 6.00 a.m.

1. Multiple choice questions.

20

SECTION – I

- 1) _____ controls the basic display properties of output primitives.
a) Attribute parameter b) Setpixel
c) Getpixel d) None of the above
- 2) The basic transformations include
a) Translation b) Rotation c) Scaling d) All of the above
- 3) The two-dimensional translation equation in the matrix form is
a) $P' = P + T$ b) $P' = P - T$ c) $P' = P \times T$ d) $P' = p$
- 4) The transformation in which an object is moved from one position to another in circular path around a specified pivot point is called
a) Rotation b) Shearing c) Translation d) Scaling
- 5) If a point (x, y) is reflected about an axis which is normal to the XY plane and passing through the origin, the reflected point (X, Y) is
a) (x, -y) b) (-x, y) c) (-x, -y) d) (y, x)
- 6) A circle, if scaled only in one direction becomes a
a) Hyperbola b) Ellipse c) Parabola d) Remains a circle
- 7) Beam penetration method is usually used as
a) LCD b) Raster Scan Display
c) Random Scan Display d) DVST



- 17) _____ is the process that expands the range of intensity level in an image so that it spans the full intensity range of display device.
- a) Slicing
 - b) Bit plane slicing
 - c) Contrast stretching
 - d) All of the above
- 18) While producing X - ray _____ is heated causing free electrons to be released.
- a) Cathod
 - b) Anode
 - c) X - ray
 - d) Gamma Rays
- 19) _____ resolution is smallest discernible change in intensity level.
- a) Spatial
 - b) Intensity
 - c) Quantization
 - d) None of these
- 20) In _____ we represent image using 8-bit, used for decomposing an image for analyzing the importance of each bit.
- a) Bit plane slicing
 - b) Contrast stretching
 - c) Histogram
 - d) All of the above

SECTION – I

2. Write short note on (**any 4**). **20**
- 1) Video controller
 - 2) Seed and edge fill
 - 3) Composite transformation
 - 4) Point and line clipping
 - 5) Raster scan display.
3. A) Explain 2 D transformation in detail. **10**
- B) Explain Bresnham's line generation algorithm with it's implementation. **10**
- OR
- B) Explain Cohan Sutherland line clipping algorithm. **10**



SECTION – II

4. Write a short note on (**any 4**). **(5×4 = 20)**
- 1) 3D-translation
 - 2) Compression and segmentation
 - 3) Image negatives and log transformation
 - 4) Gamma ray and X-ray imaging
 - 5) Perspective projection.
5. A) Components of image processing. **10**
- B) Explain 3D transformation. **10**
- OR
- B) Which are different electromagnetic spectrum used to obtain an image.
-



Seat No.	
----------	--

S.Y.M.C.A. (Faculty of Engg.) (Part – II) Examination, 2015
OPERATING SYSTEM (Old)

Day and Date : Wednesday, 6-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions: 1) Figure to the **right** indicate **full** marks.
2) Q. 3 a) and Q. 5 a) are **compulsory**.

1. MCQ/Objective type question paper : **20**
- 1) Programs such as shell and editors interact with the kernel by invoking _____
a) system calls b) exe files
c) preprocessor d) none of these
 - 2) There are about _____ system calls in Unix System V.
a) 128 b) 32 c) 64 d) 16
 - 3) A _____ is a command interpreter program that users typically execute after logging into the system.
a) directory b) fork c) exec d) shell
 - 4) The _____ module allocates CPU to processes.
a) scheduler b) library c) paging d) file
 - 5) The internal representation of a file is given by an _____
a) kernel b) inode c) file d) process
 - 6) The _____ block describes the state of a file system.
a) boot b) super c) inode list d) data
 - 7) In a buffer header, the _____ field specifies the file system.
a) device number b) block number
c) both of these d) none of these
 - 8) The algorithm for converting a file byte offset into a physical disk block is _____
a) iget b) iput c) bmap d) none of these



SECTION – I

2. Write short note on **(any 4)** : **20**
- a) Dup system call
 - b) Architecture of unix operating system
 - c) Operating system services
 - d) Uarea
 - e) Advantages and disadvantages of buffer cache.
3. A) Explain structure of buffer pool. **10**
- B) Write and explain algorithm for reading a file. **10**
- OR
- B) Explain in detail mapping of virtual addresses to the physical addresses. **10**

SECTION – II

4. Write short answer on **(any 4)** : **20**
- a) Clock
 - b) Fork system call
 - c) Disk drivers
 - d) Shared memory
 - e) Process tracing.
5. A) Explain Sockets. Write a program for server process in UNIX system domain. **10**
- B) Explain swapping process out and swapping process in mechanisms. Write and explain algorithm for swapper. **10**
- OR
- B) What do you mean by stream ? What is the role of stream driver ? Explain anomalies exist in implementation of streams. **10**
-



Seat No.	
-------------	--

S.Y.M.C.A. (Part – II) (Faculty of Engg.) Examination, 2015
DATA MINING (Old)

Day and Date : Friday, 8-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Figure to the **right** indicate **full** marks.
2) Q. 3 A and Q. 5 A are **compulsory**.
3) **Draw diagram if necessary**.

1. Choose the correct answer : **20**

- 1) _____ attempts to find a function which models the data with the least error.
- a) Clustering
b) Regression
c) Association
d) Statistical method
- 2) Link analysis alternatively referred to as _____ analysis.
- a) Serial
b) Affinity
c) Local
d) Series
- 3) _____ is used to proceed from very specific knowledge to more general information.
- a) Induction
b) Compression
c) Decompression
d) None of the above
- 4) _____ where the attribute data are scaled so as to fall within a small specified range.
- a) Attribute construction
b) Smoothing
c) Aggregation
d) Normalization
- 5) _____ find discrepancies by analyzing the data to discover rules and relationships and detecting data that violate such conditions.
- a) Data auditing tools
b) Data scrubbing tools
c) Data discrepancy tools
d) Data description tools
- 6) _____ technique include binning, regression and clustering.
- a) Generalization
b) Normalization
c) Aggregation
d) Smoothing

P.T.O.



- 7) _____ clustering builds models based on distance connectivity.
- a) K-means
 - b) Partition
 - c) Hierarchical
 - d) None of above
- 8) _____ are simple points with values much different from those of the remaining set of data.
- a) Outliers
 - b) Mean
 - c) Disjoints
 - d) None of the above
- 9) The _____ technique assumes that the entire training, set includes not only the data in the set but also the desired classification for each item.
- a) KDD
 - b) KNN
 - c) K-means
 - d) Distance measure
- 10) _____ algorithm is not very efficient because the connected components procedure which is $O(n^2)$ space and time algorithm is called at each iteration.
- a) Single link
 - b) Average link
 - c) Complete link
 - d) Middle link
- 11) _____ technique was designed to both increase the effectiveness of search engines and improve their efficiency.
- a) Page rank
 - b) Clever
 - c) HITS
 - d) None of these
- 12) A _____ query asks to find objects that are close to an identified object.
- a) Region query
 - b) Range query
 - c) Nearest neighbour query
 - d) Distance query
- 13) _____ uses a hierarchical technique to divide the spatial area into rectangular cells similar to quad tree.
- a) STING
 - b) K-D
 - c) ID3
 - d) CLARANS



- 14) _____ rule differentiate the data in spatial rules.
- a) Discriminate
 - b) Characteristic
 - c) Association
 - d) None of these
- 15) _____ data sometime referred to as click steam data.
- a) Meta data
 - b) Click data
 - c) Web log
 - d) None of these
- 16) The Apriori algorithm can be used to improve the efficiency of answering _____ queries.
- a) DDL
 - b) DML
 - c) DCL
 - d) Iceberg
- 17) _____ may visit certain number of pages and then stop, build an index, and replace the existing index.
- a) Incremental crawler
 - b) Focused crawler
 - c) Periodic crawler
 - d) None of these
- 18) Confidence measure the _____ of the rule.
- a) Support
 - b) Percentage
 - c) Strength
 - d) All of these
- 19) Speaker clustering technology used in _____ mining.
- a) Video
 - b) Audio
 - c) Image
 - d) All of these
- 20) _____ database support both transaction time and valid time.
- a) Transaction time
 - b) Snapshot time
 - c) Valid time
 - d) Bitemporal time



SECTION – I

2. Write short answer on **(any 4)** : **20**
- 1) Data mining applications.
 - 2) Classification.
 - 3) Regression.
 - 4) Data reduction.
 - 5) Hierarchical algorithm.
3. A) What is KDD ? Explain KDD steps in detail. **10**
- B) Explain single link algorithm in detail. **10**
- OR
- B) Explain data reduction and data transformation with example. **10**

SECTION – II

4. Write a short note on **(any 4)** : **20**
- i) Web mining.
 - ii) Spatial queries
 - iii) Data mining products
 - iv) Modelling temporal events.
 - v) Support and confidence.
5. A) Give an example for Apriori with transactions and explain Apriori algorithm. **10**
- B) Explain multimedia data mining. **10**
- OR
- B) Explain spatial data mining with spatial rules. **10**
-



Seat No.	
-----------------	--

**S.Y.M.C.A. (Part – II) (Faculty of Engg.) Examination, 2015
COMPUTER NETWORKS (Old)**

Day and Date : Monday, 11-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

1. Choose correct alternative. **20**

- 1) If a code has odd parity, the number of zero's in each valid codeword is _____
 - a) Odd
 - b) Even
 - c) a) and b) both
 - d) Can not be said
- 2) The slowest transmission speeds are those of _____
 - a) Twisted pair
 - b) Coaxial pair
 - c) Optical fiber
 - d) Infrared
- 3) A device that links two homogenous packet broadcast LAN's is _____
 - a) Hub
 - b) Bridge
 - c) Repeater
 - d) Gateway
- 4) Contention is _____
 - a) Transmission of packets to all computers
 - b) A carrier signal that can be modulated
 - c) The condition occurring when two or more stations attempt simultaneously channel access
 - d) A group of connecting devices
- 5) Which network topology does the internet use ?
 - a) Star
 - b) Bus
 - c) SMTP
 - d) BUD
- 6) Which of the following cable types supports the highest bandwidth ?
 - a) Coax
 - b) Fiber-optic
 - c) STP
 - d) UTP
- 7) Which of the following occurs in optical fiber ?
 - a) EMI
 - b) Cross talk
 - c) Dispersion
 - d) Attenuation



- 8) Which layer of the OSI model are specified by IEEE 802 ?
- a) Data link and network
 - b) Physical and data
 - c) Transport and session
 - d) Network and transport link
- 9) In which of the following networks reassembly is required ?
- a) Packet switched
 - b) Circuit switched
 - c) Message switched
 - d) None of these
- 10) Virtual terminal protocol is an example of which layer ?
- a) Physical
 - b) Network
 - c) Transport
 - d) None of these
- 11) ARP is _____
- a) A protocol that handles routing
 - b) A protocol used to transfer line
 - c) A protocol to bind high level IP addresses low level physical address
 - d) A protocol allowing gateway to send, control messages to other gateways
- 12) The IEEE 10 base 5 ethernet standard specifies what type of the cable ?
- a) Fiber optic
 - b) Thicknet coaxial
 - c) Twisted pair
 - d) None of these
- 13) Which of the following requires maximum overheads ?
- a) Circuit switching
 - b) Message switching
 - c) Packet switching
 - d) Hybrid switching
- 14) The sampling interval of a telephone voice signal is _____
- a) 125×10^{-6} sec.
 - b) 50×10^{-4} sec.
 - c) 25×10^{-6} sec.
 - d) 100×10^{-4} sec.
- 15) Which of the following techniques increases the data rate of a modem ?
- a) Error correction
 - b) Encryption
 - c) Error detection
 - d) Compression
- 16) The presentation layer deals with
- a) Bits
 - b) User data
 - c) Packets
 - d) Frames



- 17) Which protocol in the TCP/IP suit converts IP addresses to physical (MAC) addresses ?
a) IP b) ARP c) ICMP d) TCP
- 18) Congestion occurs when
a) There is excess traffic in a part of the network
b) Packets arrive at node at a faster rate than the rate of processing
c) Both a) and b)
d) None of the above
- 19) Which of the following schemes maintains synchronization between two communicating devices without a clocking signal ?
a) TDM
b) FDM
c) Synchronous transmission
d) Asynchronous transmission
- 20) The two dissimilar network can be connected by collision of software and hardware called _____
a) Ring b) Bus c) Star d) Gateway

SECTION – I

2. Write short note on (any 4) : 20
a) Network hardware
b) Structure of communication network
c) Synchronizing codes
d) Point-to-point and multidrop circuits
e) Fiber optic LAN.
3. Answer the following :
a) Explain any four random access protocols in brief. 10
b) Define multiplexing, explain different types of multiplexing. 10
- OR
- b) Explain various switching techniques with neat diagram. 10



SECTION – II

4. Write short note on (**any 4**) : **20**
- a) Fragmentation
 - b) Internetwork routing
 - c) Simple transport protocol
 - d) Generic domains
 - e) Sending and receiving buffers in TCP.

5. Answer the following :
- a) Explain any 5 routing algorithms with the help of diagram. **10**
 - b) Define simple error and burst error and explain error detection and correction codes. **10**

OR

- b) Explain different types of firewalls. **10**
-



Seat No.	
----------	--

**S.Y.M.C.A. (Part – II) (Faculty of Engineering) Examination, 2015
ARTIFICIAL INTELLIGENCE (Old)**

Day and Date : Wednesday, 13-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

- Instructions :** 1) Figure to the **right** indicate **full** marks.
2) Q. 3A and Q. 5A are **compulsory**.
3) **Draw diagram if necessary**.

1. Choose the correct answer :

20

- 1) Medical diagnosis task come under _____ task.
 - a) Mundane
 - b) Expert
 - c) Formal
 - d) Informal
- 2) _____ provides a way of separating important features and variations from the many unimportant ones that would otherwise overwhelm any process.
 - a) Classification
 - b) Abstraction
 - c) Substraction
 - d) None of these
- 3) Expert system _____, which provide complete environments for the construction of knowledge-based expert system.
 - a) Shells
 - b) Paradigms
 - c) Properties
 - d) Bullets
- 4) The _____ is a technique that improves the efficiency of a search process possibly by sacrificing claims of completeness.
 - a) Notation
 - b) Complexity
 - c) Heuristic
 - d) None of these
- 5) The rate at which the system is cooled is called the _____.
 - a) Ann temperature
 - b) Annealing schedule
 - c) Crystalline structure
 - d) Both a) and b)



- 6) A _____ is a state that is better than all its neighbors but is not better than some other states further away.
- a) Local maximum
 - b) Plateau
 - c) Foothills
 - d) Ridge
- 7) The _____ procedure uses substructure's list so that it can explore only a fairly limited set of structures.
- a) Plan-generate-test
 - b) Generate-and-test
 - c) Plan-and-test
 - d) Backtracking
- 8) The predicate _____ is a binary one, whose first argument is an object and whose second argument is a class to which the object belongs.
- a) Instance
 - b) Refutation
 - c) Inference
 - d) Abductive
- 9) _____ is describes a me'lange of technique, used in combination to solve problems that are not tractable by any one method alone.
- a) Natural deduction
 - b) Binary analysis
 - c) Heuristic
 - d) Backtracking
- 10) _____ in which the representation is extended to allow some kind of numeric measure of certainty to be associated with each statement.
- a) Monotonic
 - b) Nonmonotonic Inference
 - c) Statistical reasoning
 - d) Abductive
- 11) _____ is avoided at the expense of maintaining multiple contexts, each of which corresponds to a set of consistent assumptions.
- a) Backtracking
 - b) General problem analysis
 - c) State space
 - d) Ridge
- 12) Making programs that can themselves produce formal descriptions from informal ones, this process is called _____
- a) Operation
 - b) Oprationalization
 - c) Optimization
 - d) None of these
- 13) A _____ is a collection of attributes and associated values that describe some entity in the world.
- a) Frame
 - b) Script
 - c) Semantic net
 - d) None of these



- 14) Finding relationships among objects by spreading activation out from each of two nodes and seeing where the activation met, this process is called _____
- a) Intersection search
 - b) Binary search
 - c) Unary search
 - d) Interleaved search
- 15) _____ refers to the process of computing several steps of a problem solving procedure before executing any of them.
- a) Mechanism
 - b) Planning
 - c) Method
 - d) Procedure
- 16) The idea of _____ is to avoid planning altogether, and instead use the observable situation as a clue to which one can simply react.
- a) Reactive systems
 - b) Active systems
 - c) Active methods
 - d) Reactive methods
- 17) In _____ analysis linear sequences of words are transformed into structures that show how the words relate to each other.
- a) Morphological
 - b) Syntactic
 - c) Semantic
 - d) Pragmatic
- 18) Word sense disambiguation is also called as _____
- a) Lexical disambiguation
 - b) Synonym disambiguation
 - c) Semantic grammar
 - d) None of these
- 19) The _____ procedure does not need to treat maximizing and minimizing levels differently since it simply negates evaluations each time it changes levels.
- a) MINIMAX-A-B
 - b) MINIMAX
 - c) A*
 - d) Iterative-Deepening-A*
- 20) Terminating the exploration of a subtree that offers little possibility for improvement over other known paths is called a _____
- a) Futility cutoff
 - b) Alpha cutoff
 - c) Beta cutoff
 - d) None of these



SECTION – I

2. Write short answer on **(any 4)** : **20**
- 1) AI technique
 - 2) Traveling Salesman Problem
 - 3) Issues in the design of search programs
 - 4) Generate-and-Test algorithm
 - 5) Techniques for Reasoning about values.
3. A) Explain multiple techniques for knowledge representation. **10**
- B) Write AO* algorithm. **10**
- OR
- B) Explain problem characteristics in detail. **10**

SECTION – II

4. Write short answer on **(any 4)** : **20**
- 1) The unification algorithm
 - 2) Natural deduction
 - 3) Frames
 - 4) Reactive Systems
 - 5) Iterative deepening.
5. A) Explain representing simple facts in logic in detail. **10**
- B) Explain semantic nets in detail. **10**
- OR
- B) Explain Goal Stack Planning in detail. **10**
-



Seat No.	
-------------	--

**SYMCA (Part – II) (Faculty of Engg.) Examination, 2015
SOFTWARE TESTING AND QUALITY ASSURANCE
(Elective – I) (Old)**

Day and Date : Friday, 15-5-2015
Time : 3.00 p.m. to 6.00 p.m

Max. Marks : 100

1. Choose correct alternatives.

20

- 1) Which of the following is not a black box testing technique ?

A) Fault injection	B) Exploratory testing
C) Model based testing	D) Requirement testing

- 2) Product risk affects the _____ of the software.

A) Quality	B) Value
C) Both A and B	D) None

- 3) The name of the testing which is done to make sure the existing features are not affected by new changes _____

A) Recursive testing	B) White box testing
C) Unit testing	D) Regression testing

- 4) Variance from product specification is called _____

A) Report	B) Defects	C) Requirement	D) Both A and B
-----------	------------	----------------	-----------------

- 5) Retesting modules connected to the program or component after a change has been made

A) Full regression testing	B) Unit regression
C) Retesting	D) Regional testing

- 6) Verification is _____ based.

A) Process	B) Product	C) Value	D) Standard
------------	------------	----------	-------------

P.T.O.



- 7) It measures the quality of a product and it applies for particular product and deals with the product called as _____
- A) Verification B) Quality assurance
C) Quality control D) Validation
- 8) This testing technique examines the basic program structure and it derives the test data from the program logic is called as
- A) Black box testing B) White box testing
C) Grey box testing D) Closed box testing
- 9) Alpha testing will be done at
- A) User's site B) Developer's site
C) Tester's site D) Both A and B
- 10) What are the types of integration testing ?
- A) Big bang testing B) Bottom up testing
C) Top down testing D) All of these
- 11) A metric used to measure the characteristics of documentation and code called as
- A) Process metric B) Test metric
C) Product metric D) None
- 12) AdHoc testing is part of
- A) Unit testing B) Regression testing
C) Exploratory testing D) Performance testing
- 13) Management and measurement, it will come under
- A) CMM level 1 B) CMM level 3
C) CMM level 4 D) CMM level 5
- 14) Defects generally fall into the following categories
- A) Wrong B) Missing C) Extra D) All of these
- 15) Unit testing will be done by
- A) Testers B) Developers C) End users D) Customers



- 16) Which SDLC model will require to start testing Activities when starting development activities itself
- A) Water fall model B) Spiral model
C) Linear model D) V-model
- 17) Which is Black Box Testing Method ?
- A) Equivalence Partitioning B) Code Coverage
C) Fault Injection D) All of these
- 18) This type of test include, how well the user will be able to understand and interact with the system ?
- A) Usability testing B) User acceptance testing
C) Alpha testing D) Beta testing
- 19) What are the testing levels ?
- A) Unit testing B) Integration testing
C) Acceptance testing D) All of these
- 20) A matric used to measure the characteristic of method, techniques, tools and code called as
- A) Process metric B) Product metric
C) Test metrics D) All of these

SECTION – I

2. Write short note on **(any 4)** :

20

- 1) SQA Activities
- 2) Process classification
- 3) Clean room software development
- 4) Building blocks of SQA
- 5) Software quality matrices.



- 3. A) Explain Reliability Models. 10
- B) Explain planning and standards of SQA. 10
- OR
- B) Explain about verification and validation planning. 10

SECTION – II

- 4. Write short note on **(any 4)** : 20
 - 1) Manual and automatic testing
 - 2) Acceptance testing
 - 3) Test cases
 - 4) Usability testing
 - 5) CAST.
 - 5. A) Explain about White Box Testing. 10
 - B) Explain the need and advantages of Dynamic Testing. 10
 - OR
 - B) Explain Testing Life Cycle. 10
-



Seat No.	
-----------------	--

**S.Y. M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
RELATIONAL DATABASE MANAGEMENT SYSTEM (New)**

Day and Date : Wednesday, 6-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

Instructions: 1) Figures to the *right* indicate *full* marks.
2) **Q.3. A and Q. 5. A are compulsory.**

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. 1) In E-R diagrams double rectangles represent
a) attributes b) strong entity c) weak entity d) relationships
- 2) The process of designating sub-groupings within an entity set is called as
a) specialization b) generalization c) extensibility d) none of these
- 3) In relational model, a _____ in a table represents a relationship among a set of values.
a) column b) row c) name d) key
- 4) A _____ is a language in which a user requests information from the database.
a) programming language b) low level
c) high level d) query language
- 5) The _____ operation in relational algebra is a unary operation.
a) Union b) Set difference
c) Cartesian product d) Select
- 6) Relational calculus is considered to be _____ language.
a) procedural b) non-procedural
c) high level d) low level
- 7) _____ commands are used to create, alter and delete database objects.
a) DDL b) DCL c) DML d) DQL



- 8) In SQL, the _____ operation is used for finding elements present in one set but not in the other.
- a) union b) intersect c) minus d) average
- 9) Views on which data manipulation can be done are called
- a) read only b) data c) changeable d) updatable
- 10) A _____ defines an action the database should take when some database related event occurs.
- a) stored procedure b) trigger
c) constraint d) key
- 11) _____ dependency disallows an attribute in a tuple to have a set of values.
- a) Transitive b) Multi-valued
c) Functional d) None of these
- 12) The _____ states that the domain of an attribute must include only atomic values.
- a) 1 NF b) 2 NF c) 3 NF d) 3.5 NF
- 13) _____ is based on the concept of transitive dependency.
- a) 1 NF b) 2 NF c) 3 NF d) BCNF
- 14) The primary medium for long-term online storage of data is
- a) flash memory b) cache memory
c) main memory d) magnetic disk
- 15) In _____ file organization, records are stored in sequential order according to the value of a search key of each record.
- a) heap b) sequential c) hashing d) none of these
- 16) Collection of operations that form a single logical unit of work are called
- a) entity b) relation c) transactions d) none of these
- 17) In two-phase locking protocol, a transaction may obtain locks but may not release any lock in _____ phase.
- a) growing b) shrinking c) locked d) shared
- 18) _____ property of a transaction ensures that either all effects of a transaction are reflected in the database or none are.
- a) Atomicity b) Consistency c) Isolation d) Durability



- 19) A _____ parallel machine consists of a small number of powerful processors.
a) massively b) fine-grain c) coarse-grain d) none of these
- 20) In distributed systems, a _____ transaction is one that accesses data only from sites where the transaction was initiated.
a) global b) node c) committed d) local

SECTION – I

2. Write short notes (**any 4**) : **20**
- 1) Basic structure of E-R diagram
 - 2) Concept of keys
 - 3) QBE
 - 4) Triggers
 - 5) Authorization in Sql.
3. A) Explain using example the concept of reduction of ER schema to tables. **10**
B) Write a short note on fundamental operations in relational algebra. **10**
- OR
- B) Write a short note on constraints. **10**

SECTION – II

4. Write short notes (**any 4**) : **20**
- 1) Functional dependency
 - 2) Third normal form
 - 3) Magnetic disk
 - 4) Data dictionary
 - 5) States of transaction.
5. A) Write a note on dynamic hashing. **10**
B) Explain the concept of serializability with example. **10**
- OR
- B) Explain parallel database architectures in detail. **10**
-



Seat No.	
-----------------	--

**S.Y.M.C.A. (Part – II) (New) (Faculty of Engg.) Examination, 2015
OPERATIONS RESEARCH**

Day and Date : Friday, 8-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

1. MCQ : **(20×1=20)**

- 1) The graphical method of LP problem uses
 - i) Objective function equation
 - ii) Constraint equation
 - iii) Linear equation
 - iv) All of the above
- 2) For maximization problem, the objective function coefficient for an artificial variable is
 - i) +M
 - ii) –M
 - iii) Zero
 - iv) None of the above
- 3) The dual of the primal maximization LP problem having m constraints and n non-negative variables should
 - i) Have n constraints and m non-negative variables
 - ii) Be a minimization LP problem
 - iii) Both i) and ii)
 - iv) None of the above
- 4) The dummy source or destination in a transportation problem is added to
 - i) Satisfy rim conditions
 - ii) Prevent solution from becoming degenerate
 - iii) Ensure that total cost does not exceed a limit
 - iv) None of the above
- 5) The method used for solving an assignment problem is called
 - i) Reduced matrix method
 - ii) MODI method
 - iii) Hungarian method
 - iv) None of the above



- 6) Two person zero sum game means that the
- i) Sum of losses to one player is equal to the sum of gains to other
 - ii) Sum of losses to one player is not equal to the sum of gains to other
 - iii) Both i) and ii)
 - iv) None of the above
- 7) If two constraints do not intersect in the positive quadrant of the graph, then
- i) The problem is infeasible
 - ii) The solution is unbounded
 - iii) One of the constraint is redundant
 - iv) None of the above
- 8) Which of the following methods is used to verify the optimality of the current solution of the transportation problem
- i) Least cost method
 - ii) Vogel's approximation method
 - iii) Modified distribution method
 - iv) All of the above
- 9) What happens when maxmin and minmax values of the game are same ?
- i) No solutions exists
 - ii) Solution is mixed
 - iii) Saddle point exists
 - iv) None of the above
- 10) A mixed strategy game can be solved by
- i) Algebraic method
 - ii) Matrix method
 - iii) Graphical method
 - iv) All of the above
- 11) Which of the following characteristics apply to queuing system ?
- i) Customer population
 - ii) Arrival process
 - iii) Both i) and ii)
 - iv) None of the above
- 12) Priority queue discipline may be classified as
- i) Finite or infinite
 - ii) Limited and unlimited
 - iii) Pre-emptive or non pre-emptive
 - iv) All of the above
- 13) Expected length of non-empty queue is given by
- i) $L = \mu / (\mu - \lambda)$
 - ii) $L = S\mu / (S\mu - \lambda)$
 - iii) $L = \lambda / (\mu - \lambda)$
 - iv) $L = \lambda / (\mu - \lambda + 1/\mu)$



- 14) Expected waiting time of customer in the system is
 - i) $Wq = Lq/\lambda$
 - ii) $Wq = Ls/\lambda$
 - iii) $Wq = Ls - 1/\mu$
 - iv) $Wq = Lq + \lambda$
- 15) Critical Path Method (CPM) was developed by _____
 - i) Johnny Lever
 - ii) Johnny Walker
 - iii) Walker
 - iv) E. I. Dupont
- 16) When more than one activity comes and joins an event, such event is known as _____ ?
 - i) Merge event
 - ii) Burst event
 - iii) Merge and burst event
 - iv) None
- 17) The problem of replacement is felt when job performing units fail
 - i) Suddenly
 - ii) Gradually
 - iii) Both i) and ii)
 - iv) i) but not ii)
- 18) The sudden failure among item is seen as
 - i) Progressive
 - ii) Retrogressive
 - iii) Random
 - iv) All of the above
- 19) The objective of network analysis is to minimize total project cost, is _____
 - i) False
 - ii) True
 - iii) Can't say
 - iv) None
- 20) PERT is a tool for planning and control of time, is
 - i) False
 - ii) True
 - iii) Can't say
 - iv) None

SECTION – I

2. Attempt **any four** :

(4x5=20)

- 1) Find the saddle point (or points) and hence solve the games :
The payoff matrix is given by

		B			
		1	2	3	4
A	1	8	6	2	8
	2	8	9	4	5
	3	7	5	3	5

Determine the saddle point, if exists.



2) Determine the optimal shipping schedule

Warehouse

		A	B	C	Plant Supply
Plant	W	12	8	18	400
	X	20	10	16	350
	Y	24	14	12	150
	Warehouse demand	500	200	300	

3) Maximize $Z = 4X_1 - 3Y$

Subject to the constraints

$$X_1 + Y \geq 4$$

$$2X_1 - Y \geq -2$$

$$X_1 \leq 3$$

$$Y \geq 2$$

4) Write the dual of following LPP :

Maximize $Z = 2X_1 + X_2$

Subject to $X_1 + 2X_2 \leq 10$

$$X_1 + X_2 \leq 6$$

$$X_1 - X_2 \leq 2$$

$$X_1 - 2X_2 \leq 1$$

$$X_1, X_2 \geq 0$$

5) Write branch and bound algorithm



3. Attempt **any one** : **(1×10=10)**

1) Solve the assignment problem for maximum sale

		District				
		A	B	C	D	E
Salesman	1	32	38	40	28	40
	2	40	24	28	21	36
	3	41	27	33	30	37
	4	22	38	41	36	36
	5	29	33	40	35	39

2) Use dominance principle to solve following game

		Player B		
		1	2	3
Player A	1	2	0	3
	2	3	-1	1
	3	5	2	1

4. Solve the LPP using simplex method **10**

Maximize $Z = 2X_1 + X_2 + 3X_3$

Subject to $X_1 + X_2 + 2X_3 \leq 5$

$$2X_1 + 3X_2 + 4X_3 = 12$$

$$X_1, X_2, X_3 \geq 0$$

SECTION – II

5. Attempt **any four** : **(4×5=20)**

1) A television repairman finds that the time spent on his jobs has an exponential distribution with a mean of 30 minutes. If he repairs the sets in the order in which they came in, and if the arrival of sets follows Poisson distribution with an approximate average rate of 10 per 8 hour day. What is the repairman's expected idle time each day ? How many jobs are ahead of the average set just brought in ?



- 2) A bookbinder has one printing machine, one binding machine and manuscripts of 7 different books. The time required for performing printing and binding operations for different books are known below :

Book	1	2	3	4	5	6	7
Printing time (hr)	20	90	80	20	120	15	65
Binding time (hr)	25	60	75	30	90	35	50

Determine the sequence table and find the idle time for binding machine, printing machines and total elapsed time.

- 3) The s as the data on the running costs per year and resale price of equipment A, whose purchase price is Rs. 2,00,000 are as follows :

Year	1	2	3	4	5	6	7
Running Cost (Rs.)	30,000	38,000	46,000	58,000	72,000	90,000	1,10,000
Resale Value (Rs.)	1,00,000	50,000	25,000	12,000	8,000	8,000	8,000

What is the optimum period of replacement ?

- 4) A manufacturer is offered machines A its priced at Rs. 5,000 and running costs are estimated at Rs. 800 for each of the five years. Increasing by Rs. 200 per year in the sixth and subsequence years. If money is worth 10% per year when should machine be replaced ?
- 5) A small project is composed of 9 activities whose time estimate are given below :

Activity Name	Event	1 – 2	1 – 3	1 – 4	2 – 5	2 – 6	3 – 6	4 – 7	5 – 7	6 – 7
Time required in day	t_o	5	18	26	16	15	6	7	7	3
	t_m	8	20	33	18	20	9	10	8	4
	t_p	10	22	40	20	25	12	12	9	5

- Draw PERT network.
- Find critical path of expected project and expected project length.



6. Attempt the following :

(2×10=20)

- 1) Find the sequence that minimizes that total time required in performing the following jobs on three machines in the order ABC. Processing time (in hours) is given below :

Job	A	B	C	D	E	F	G
Machine A	3	8	7	4	9	8	7
Machine B	4	3	2	5	1	4	3
Machine C	6	7	5	11	5	6	12

- 2) A project is composed of 12 activities whose time estimate are given below :

Activity Name	Event	1 – 2	2 – 3	2 – 4	3 – 5	4 – 5	4 – 6	5 – 7	6 – 7	7 – 8	7 – 9	8 – 10	9 – 10
Time Required in day	t_o	1	1	1	3	2	3	4	6	2	4	1	3
	t_m	2	2	3	4	3	5	5	7	4	6	2	3
	t_p	3	3	5	5	4	7	6	8	6	8	3	7

- i) Find the expected duration and variance for each activity.
- ii) Draw PERT network.
- iii) Find critical path of expected project and expected project length.
- iv) The earliest and latest time to reach each event.
- v) Calculate variance and SD of the project length.

OR



2. A computer has a large no of electronic tubes. They are subject to the following mortality rates :

Period	Age of failure (hrs)	Probability of failure
1	0 – 200	0.10
2	201 – 400	0.26
3	401 – 600	0.35
4	601 – 800	0.22
5	801 – 1000	0.07

If the tubes are group replaced, the cost of replacement is Rs. 15 per tube. Replacement of individual tubes that fail in service, costs Rs. 60 per tube. How frequently should the tube be replaced ?



Seat No.	
----------	--

F.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
DIGITAL ELECTRONICS

Day and Date : Saturday, 9-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

- Instructions:** 1) Figures to the **right** indicate **full** marks.
2) Q. 3 A and Q. 5 A are **compulsory**.
3) Draw diagram **if necessary**.

1. Multiple choice questions :

20

- 1) 0110 gray code is equivalent to _____ binary code.
a) 0100 b) 0101 c) 0010 d) 1011
- 2) The total no. of bit in one word is _____
a) 8 b) 4 c) 16 d) 32
- 3) Which of the following is a self complementing code ?
a) Excess 3 code b) Gray code
c) Hamming code d) Cyclic code
- 4) A bubbled NAND gate is equivalent to a _____ gate.
a) OR b) AND c) X-OR d) Inverter
- 5) Conversion of $A(\bar{B} + A)B$ into minterm is _____
a) 3 b) 0, 1, 2 c) 0, 1 d) 2
- 6) Which is correct ?
a) $A \cdot A = 0$ b) $A + 1 = A$
c) $A + A = \bar{A}$ d) $\bar{A} \cdot \bar{A} = 0$
- 7) $AB + \bar{A}C = AB + \bar{A}C + BC$ represents which theorem ?
a) Consensus b) Transposition
c) De-morgan's d) None of these



8) Which is the minimized expression for K-map shown below

- a) $\overline{AC} + \overline{AD} + \overline{BC} + BD$ b) $\overline{AC} + \overline{AD} + \overline{BC}$
 c) $\overline{AD} + BC + ABCD$ d) $\overline{AC} + \overline{BC} + \overline{AD} + BD$

1	1	1	
1	1	1	
1	1	1	

9) In K-map the input values are ordered by _____ sequence.

- a) Gray code b) BCD code
 c) Binary code d) Decimal code

10) $y = \overline{A} + \overline{B} + \overline{C}$ represents a,

- a) NOR gate b) AND gate
 c) X-OR gate d) NAND gate

11) A full-adder can be realised using

- a) 1 half-adder, 2 OR gates
 b) 2 half-adders, 1 OR gate
 c) 2 half-adders, 2 OR gates
 d) 2 half-adders, 1 AND gate

12) Which logic gate is a basic comparator ?

- a) NOR b) NAND c) X-OR d) X-NOR

13) A BCD-to-decimal decoder is

- a) 3-to-8 line decoder b) 1-to-10 line decoder
 c) 4-to-10 line decoder d) 3-to-10 line decoder

14) A multiplexer is also known as

- a) a data accumulator b) a data restorer
 c) a data selector d) a data distributor

15) A flip-flop has two outputs, which are

- a) always 0 b) always 1
 c) always complimentary d) none of these



- 16) If a sequential circuit does not use clock pulses, then it is
- a) an asynchronous sequential circuit
 - b) a synchronous sequential circuit
 - c) a counter
 - d) a shift register
- 17) A flip-flop can store
- a) 1 bit of data
 - b) 2 bits of data
 - c) 3 bits of data
 - d) 4 bits of data
- 18) When an inverter is placed between the inputs of an S-R flip-flop, then the resulting flip-flop is
- a) J-K flip-flop
 - b) Master-slave flip-flop
 - c) T flip-flop
 - d) D flip-flop
- 19) A universal register
- a) accepts serial input
 - b) accepts parallel input
 - c) gives serial and parallel outputs
 - d) all of the above
- 20) A _____ is a set of flip-flops whose states change in response to pulses applied at input.
- a) Counter
 - b) Register
 - c) MOS
 - d) None of these

2. Write short note on **(any 4)** :

20

- 1) Gray code.
- 2) Realize using NAND gate $A + AB + \overline{A}CB + \overline{A}\overline{B}$.
- 3) Expand $\overline{a}b + \overline{b}$ to minterm and maxterm.
- 4) De Morgan's Theorem.
- 5) Two examples on binary division.



3. A) What is SOP and POS ? Find minterm expansion of, $f(a, b, c, d) = a(\bar{b} + d) + ac\bar{d}$. **10**
B) Simplify the given function and implement using NAND gate. **10**
- OR
- B) Show that NAND and NOR gates are universal gates. **10**
4. Attempt **any four** : **(5×4=20)**
a) Explain half-adder.
b) Using a proper diagram and function table explain 4-input multiplexer.
c) Write a note on edge-triggered flip-flops.
d) Explain buffer register using a proper logic diagram.
e) Write a short note on SIPO shift register.
5. A) Explain 3-line to 8-line decoder using logic circuit and truth table. **10**
B) Explain J-K flip-flop with clock, preset and clear inputs. Draw characteristic table, characteristic equation and excitation table. **10**
- OR
- B) Explain bidirectional shift register using logic diagram. **10**
-



Seat No.	
-------------	--

**S.Y.M.C.A. (Under Faculty of Engg.) (Part – II) (New) Examination, 2015
DESIGN AND ANALYSIS OF ALGORITHM**

Day and Date : Monday, 11-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions: 1) *Draw diagram wherever necessary.*
2) *Figure to the right indicates full marks.*

1. Multiple choice questions :

20

- 1) Time complexity of merge sort in worst case is _____
 - a) $O(n \log n)$
 - b) $O(n)$
 - c) $O(n + 1)$
 - d) None of these
- 2) A _____ schedule is a schedule in which the processing of a task or any processor is not terminated until the task is complete.
 - a) Non preemptive
 - b) Preemptive
 - c) Both a) and b)
 - d) None of these
- 3) _____ approach can be used in quick sort.
 - a) Divide and conquer
 - b) Greedy
 - c) Both a) and b)
 - d) None of these
- 4) The most important advantages of using randomized algorithm are their _____
 - a) Simplicity
 - b) Efficiency
 - c) Both a) and b)
 - d) None of these
- 5) The _____ of an algorithm is the amount of memory it need to run to completion.
 - a) Space complexity
 - b) Time complexity
 - c) Both a) and b)
 - d) None of these
- 6) An algorithm A is said to be _____ if it calls another algorithm which intern calls A.
 - a) Indirect
 - b) direct
 - c) Both a) and b)
 - d) None of these

P.T.O.



- 7) Which of the following is useful in implementing quick sort ?
- a) Stack
 - b) List
 - c) Set
 - d) Queue
- 8) Which of the following best described sorting ?
- a) Accessing and processing each record exactly once
 - b) Finding the location of the record with a given key
 - c) Arranging the data in some given order
 - d) All of above
- 9) If a binary tree traversed in inorder then number of the node are printed in an order
- a) Ascending order
 - b) Descending order
 - c) Randomly
 - d) None of these
- 10) String edition is the problem where we want to _____ X into Y using a sequence of edit operations on X.
- a) Add
 - b) Transform
 - c) Reverse
 - d) All
- 11) A BFS can be used to determine whether G has _____
- a) Connected
 - b) Biconnected
 - c) Transitive Closure
 - d) Both a) and b)
- 12) _____ constraints determines which of the tuple in the solution space satisfy the criteria.
- a) Implicit
 - b) Explicit
 - c) Back track
 - d) Programming
- 13) If a graph can be colored with 3 colors then 3 is called as _____ number.
- a) Isomorphic
 - b) Chromatic
 - c) Optimal
 - d) Pentomino



- 14) The examination of every vertex in the object being searched is called a _____
 - a) Traversal
 - b) Adjacency list
 - c) Adjacency matrix
 - d) None
- 15) GCD (13, 8) is _____
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 16) 8 queen's problem is solved by _____
 - a) Backtracking
 - b) Branch and Bound
 - c) Greedy method
 - d) None of these
- 17) If tree is having m levels then the total node in the tree is _____
 - a) 2^{m+1}
 - b) $2^m - 1$
 - c) $2^m \cdot n$
 - d) $2^m - 1$
- 18) An element in commutative ring is called a _____ n^{th} root of unity.
 - a) Fourier
 - b) Quadratic
 - c) Lagrange's
 - d) None of these
- 19) A system that allows for the manipulation of mathematical expression is called a _____ system.
 - a) Mathematical
 - b) Mathematical symbol
 - c) Manipulation
 - d) Mathematical symbol manipulation
- 20) The solution to many problems involves the manipulation of _____
 - a) Binary trees
 - b) Trees
 - c) Graphs
 - d) All

SECTION – I

2. Write short note on following (**any 4**) :

20

- 1) Randomized algorithm
- 2) Algorithm for finding maximum and minimum of two numbers
- 3) Optimal merge pattern
- 4) Flow shop scheduling
- 5) Recursive algorithm.



3. A) Define and explain asymptotic notations (O , Ω , θ) to measure complexity of an algorithm. **10**
- B) Write an algorithm for merge sort. Explain it with an example. **10**

OR

- B) Explain multistage graph for finding minimum cost path with an example.

SECTION – II

4. Write short note on following (**any 4**) : **20**
- 1) Algorithm for Greatest common divisor
 - 2) Depth first search
 - 3) Branch and Bound techniques
 - 4) Even Faster evaluation and interpolation
 - 5) Bi-connected components.
5. A) Write an algorithm for Graph coloring problem. **10**
- B) Explain algorithm for 8 queen's problem using backtracking. **10**

OR

- B) Write and explain Fast Fourier transformation with recursion.
-



Seat No.	
----------	--

**S.Y. M.C.A. Part – II (Under Faculty of Engg.) Examination, 2015
PROGRAMMING IN JAVA (New)**

Day and Date : Wednesday, 13-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

- Instructions :** 1) Figures to the **right** indicates marks.
2) **Q. 3. A) and Q. 5. A) are compulsory.**
3) Write a program **if necessary.**

1. Multiple Choice Questions : **(1×20=20)**

- 1) A _____ serves as a template that provides a layout common to all of its instances known as objects.
a) class b) constructor c) structure d) none of these
- 2) The _____ method of string class is used to remove all the white spaces at the beginning and end of string.
a) ltrim() b) rtrim() c) trim() d) wtrim()
- 3) The execution of an applet begins from the _____ method.
a) init() b) main() c) paint() d) none of these
- 4) Which of the following package stores all the standard java classes ?
a) lang. b) java c) util d) java.packages
- 5) Which of the following is correct way of implementing an interface salary by class manager ?
a) class manager extends salary {}
b) class manager implements salary {}
c) class manager imports salary {}
d) none of the mentioned
- 6) Which of these methods is a part of Abstract Window Toolkit (AWT) ?
a) display() b) print() c) drawString() d) transient()



- 7) What will happen if two thread of same priority are called to be processed simultaneously ?
- a) any one will be executed first lexographically
 - b) both of them will be executed simultaneously
 - c) none of them will be executed
 - d) it is dependent on the operating system
- 8) Which of these statements is incorrect ?
- a) by multithreading CPU's idle time is minimized and we can take maximum use of it
 - b) by multitasking CPU's idle time is minimized and we can take maximum use of it
 - c) two thread in Java can have same priority
 - d) a thread can exist only in two states, running and blocked
- 9) Which of these methods can be used to obtain the coordinates of a mouse ?
- a) getPoint()
 - b) getCoordinates()
 - c) getMouseXY()
 - d) getMouseCoordinates()
- 10) Which of these is superclass of WindowEvent class ?
- a) WindowEvent
 - b) ComponentEvent
 - c) ItemEvent
 - d) InputEvent
- 11) Java _____ provides platform-independent and lightweight components.
- a) AWT
 - b) Swing
 - c) Both
 - d) None of these
- 12) The JRootPane class is the class that manages the appearance of _____ objects.
- a) JApplet
 - b) JFrame
 - c) Both a) and b)
 - d) None of these
- 13) The JTable component is a swing component that allow to _____ tabular data.
- a) show
 - b) edit
 - c) both a) and b)
 - d) none of these
- 14) What does the JDBC do ?
- a) connection with database
 - b) send the SQL statements
 - c) process the ResultSet
 - d) all of these
- 15) The ResultSet acts as an _____ and materialize one tuple at a on a user demand.
- a) iterator
 - b) stack
 - c) list
 - d) queue



- 16) _____ is an API that provides a mechanism to create distributed application.
- a) RMI b) JDBC c) AWT d) None of these
- 17) RMI server is _____
- a) multithreaded b) no multithreaded
c) synchronized multithreaded d) all of these
- 18) _____ is a higher level protocol that manages to robustly packets, sorting and retransmitting them as necessary to reliably transmit data.
- a) IP b) UDP c) TCP d) All of these
- 19) _____ provides a reasonable intelligible form to uniquely identify information on the internet.
- a) HTTP b) URL c) www d) None of these
- 20) _____ represents standard way to identify a resource.
- a) URI b) URL c) Both a) and b) d) None of these

SECTION – I

2. Write short note on **(any 4)** : **20**
- a) abstract classes
 - b) multithreading
 - c) text listener events
 - d) package
 - e) example of interface within interface.
3. A) Describe thread life cycle with the help of example. **10**
- B) Write a program to explain the concept of event handling. **10**
- OR
- B) Differentiate between InputStream and OutputStream classes and Reader and Writer Classes. Give an example of each. **10**



SECTION – II

4. Write a short note on **(any 4)** : **20**
- a) Java swing textfield component.
 - b) Java DatagramSocket and DatagramPacket classes.
 - c) Network protocol driver.
 - d) Socket and ServerSocket.
 - e) Stub and Skeleton in RMI.
5. A) Explain the role of Connection and Statement interfaces in JDBC. Write and explain a program using of these interfaces. **10**
- B) What is table and combo box in swing ? Explain JTable and JComboBox components with program example. **10**
- OR
- B) Explain different steps of creating RMI application with a program example. **10**
-



Seat No.	
----------	--

S.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
Elective – I : UNIX OPERATING SYSTEM

Day and Date : Friday, 15-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

Instructions : 1) Figure to the **right** indicate **full** marks.
2) Q. 3. A) and Q. No. 5. A) are **compulsory**.

1. MCQ/Objective type question paper. **20**
- 1) Programs such as shell and editors interact with the kernel by invoking
a) system calls b) exe files c) preprocessor d) none of these
 - 2) There are about _____ system calls in Unix System V.
a) 128 b) 32 c) 64 d) 16
 - 3) Every non-leaf node of the Unix file system is _____ of files.
a) regular b) device c) directory d) none of these
 - 4) When a process executes a system call, the execution mode of the process changes from user mode to _____ mode.
a) kernel b) strict c) address d) none of these
 - 5) The internal representation of a file is given by an
a) kernel b) inode c) file d) process
 - 6) The _____ block occupies the beginning of a file system.
a) boot b) super c) inode list d) data
 - 7) In buffer pool, the kernel maintains a _____ of buffers that preserves the least recently used order.
a) used list b) unused list c) free list d) inode list
 - 8) The algorithm for converting a file byte offset into a physical disk block is
a) iget b) iput c) bmap d) none of these
 - 9) The utility program _____ organizes the data blocks of a file system in a linked list.
a) ntfs b) dat c) mkfs d) dtfs



SECTION – I

2. Write short note (**any 4**) : **20**
- 1) Unix file system
 - 2) Operating system services
 - 3) Buffer header
 - 4) Super block
 - 5) lseek system call.
3. A) Explain architecture of Unix operating system in detail using a proper diagram. **10**
- B) Explain 'open' system call using algorithm. **10**
- OR
- B) Explain the concept of pipes in detail. **10**

SECTION – II

4. Write short note (**any 4**) :
- 1) Context of a process
 - 2) Process termination
 - 3) Algorithm to allocate map space
 - 4) Data structures for demand paging
 - 5) Process tracing.
5. A) Explain process state transition diagram in detail. **10**
- B) Explain the process of system booting and initialization using algorithm. **10**
- OR
- B) Write a short note on driver interfaces. **10**
-



Seat No.	
-----------------	--

**S.Y. M.C.A. (Part – II) (Under Faculty of Engg.) (New Syllabus) Examination, 2015
OBJECT ORIENTED ANALYSIS AND DESIGN (Elective – I)**

Day and Date : Friday, 15-5-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

Marks : 20

1. Choose the correct alternative :

- 1) A modeling language is a language whose vocabulary and rules focus on the _____ representation of the system.
 - a) Conceptual
 - b) Physical
 - c) Both a) and b)
 - d) None of the above
- 2) A _____ is a description of a set of objects that share the same attributes, operations, relationships and semantics.
 - a) Class
 - b) Interface
 - c) Collaboration
 - d) Use case
- 3) A _____ diagram shows the configuration of run-time processing nodes and the components that live on them.
 - a) Activity diagram
 - b) State diagram
 - c) Sequence diagram
 - d) None of these
- 4) “Java :: awt” is example of
 - a) Simple name
 - b) Qualified name
 - c) Complex name
 - d) None of the above
- 5) A _____ is a using relationship that states that a change in specification of one thing may affect another thing that uses but not necessarily the reverse.
 - a) Dependency
 - b) Generalization
 - c) Association
 - d) Semantic relation
- 6) An _____ is a concrete manifestation of an abstraction to which a set of operations can be applied and which has a state that stores the effects of the operations.
 - a) Instance
 - b) Abstraction
 - c) Operations
 - d) State
- 7) _____ is sometimes called an “is-a-kind-of” relationship.
 - a) Generalization
 - b) Association
 - c) Specialization
 - d) Dependencies
- 8) A responsibility is a _____ of a class.
 - a) contract
 - b) obligation
 - c) both a) and b)
 - d) none of above
- 9) A note is a graphical symbol for rendering constraints or comments attached to an element or a collection of elements.
 - a) Constraints
 - b) Comments
 - c) Adornments
 - d) Both a) and b)
- 10) An element owned by a package is
 - a) Public
 - b) Private
 - c) Protected
 - d) Friend

P.T.O.



SECTION – I

2. Write short notes on (**any 4**) : **(5×4=20)**
- 1) Structural things
 - 2) Modeling architectural views.
 - 3) Swimlanes.
 - 4) Packages.
 - 5) Stereotypes.
3. A) What is an interface ? Discuss the ways that element realizes an interface with suitable example. **10**
- B) Explain use case diagram in detail with an example. **10**

OR

- B) Prepare a class diagram for college library system consisting of atleast 5 classes. Define appropriate relationship between them. **10**

SECTION – II

4. Write a short notes on (**any 4**) : **20**
- 1) Messages in interactions.
 - 2) Internal structure of component.
 - 3) Substates.
 - 4) Structural collaboration.
 - 5) Communication in processes.
5. A) Explain state chart diagram with example. **10**
- B) Explain deployment diagram with example. **10**

OR

- B) Explain sequence diagram. Draw a sequence diagram for ATM system.
-



Seat No.	
-------------	--

**T.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
MOBILE COMMUNICATIONS**

Day and Date : Tuesday, 5-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

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

1. Choose correct alternative. 20

- 1) _____ refers to a user who has access to the same or similar telecommunication services at different places.
 - a) Device portability
 - b) Device mobility
 - c) User portability
 - d) User mobility
- 2) _____ invented optical telegraph in 1794.
 - a) Marconi
 - b) Alexander G. bell
 - c) H. Hertz
 - d) Claude chappe
- 3) GSM stands for
 - a) group special mobile
 - b) global system for mobile communication
 - c) both a and b
 - d) none of these
- 4) _____ layer is the lowest layer in communication.
 - a) N/w layer
 - b) Data link layer
 - c) Physical layer
 - d) Transport layer
- 5) The original signal is spread due to different delays of parts of the signal is called _____.
 - a) spread delay
 - b) delay spread
 - c) multipath propagation
 - d) none of these.



- 6) The quick changes in the received power are also called as
- a) Doppler shift
 - b) long term fading
 - c) short term fading
 - d) flat fading
- 7) _____ describe how several users can share a medium with minimum or no interference
- a) Guard space
 - b) Multiplexing
 - c) Modulation
 - d) None of these
- 8) _____ gives good protection against interference and tapping.
- a) CDM
 - b) TDM
 - c) FDM
 - d) SDM
- 9) From base station to mobile station or from satellite to ground control is _____
- a) uplink
 - b) downlink
 - c) 1-persistent CSMA
 - d) p-persistent CSMA
- 10) _____ is a random access scheme without a central arbiter controlling access and without co-ordination among the stations.
- a) MACA
 - b) Slotted aloha
 - c) Classical aloha
 - d) DAMA
- 11) No license are needed for _____ technology and shielding is very simple.
- a) Radio transmission
 - b) Infra red
 - c) GSM
 - d) BRAN
- 12) _____ wireless n/w's do not need any infrastructure.
- a) DECT
 - b) TETRA
 - c) Ad-hoc
 - d) None of these
- 13) ESS stands for
- a) Embedded Services Set
 - b) Extended Service Set
 - c) Exempted Service Set
 - d) Explained Service Set
- 14) BRAN is
- a) Broadband Radio Access N/w
 - b) Broad Band Repair Access N/w
 - c) Broadband Radio Active N/w
 - d) Broad Band Revised Access N/w



- 15) WPAN stands for
a) Wired Personal Area N/w b) Wireless Personal Area N/w
c) Wireless Provisional Area N/w d) Wired Provisional Area N/w
- 16) Active member address in Bluetooth is of _____ bit
a) 1 b) 2 c) 3 d) 32
- 17) Forming groups of piconets is called _____
a) scatternet b) superpiconet
c) supernet d) none of these
- 18) RFCOMM is also known as _____
a) telephony control protocol b) host controller interface
c) cable replacement protocol d) none of these
- 19) _____ state is lowest power consumption in Bluetooth low power states
a) Hold b) Park c) Sniff d) Sleep
- 20) WAP is
a) Wireless Access Protocol b) Wireless Application Product
c) Wireless Application Protocol d) None of these

SECTION – I

2. Write short note on (**any 4**).

20

- a) Radio interface in GSM
- b) Signal propagation
- c) Modulation
- d) Handover and its types
- e) Hidden terminal and exposed terminal problem



3. a) Give history of mobile communication. **10**
b) Explain multiplexing and its types. **10**

OR

- b) Explain dect and tetra. **10**

SECTION – II

4. Write short note on (**any 4**). **20**

- a) Mobile ad hoc n/w
b) HIPERLAN
c) WAP architecture
d) Infrastructure and ad-hoc n/w
e) IEEE 802.11

5. a) Explain advantages and disadvantages of WLAN and explain infrared v/s radio communication. **10**
b) Explain DHCP protocol. **10**

OR

- b) Explain Bluetooth in detail. **10**
-



Seat No.	
----------	--

T.Y.M.C.A. (Faculty of Engg.) (Part – I) Examination, 2015
WEB DESIGN TECHNIQUES

Day and Date : Thursday, 7-5-2015

Total Marks : 100

Time : 10.30 a.m. to 1.30 p.m.

Instruction : Question 3 A) and 5 A) are compulsory.

1. Choose the correct answer : **20**

- 1) What is correct HTML tag for inserting a line break ?
a)
 b) <lb> c) <break> d) none of these
- 2) Which is the current version of HTML ?
a) HTML ++ b) HTML 3.0 c) HTML 5 d) HTML 4.0
- 3) Which is a appropriate tag to display content from multiple webpages ?
a) <frame> b) <iframe>
c) both a) and b) d) none of these
- 4) To create a combo box which tag we used
a) <list> b) <select>
c) <input type = "select"> d) none of these
- 5) Which is true to change the text color to red ?
a) <BODY BGCOLOR = RED> b) <BODY COLOR = RED>
c) <BODY TEXTCOLOR = RED> d) None of these
- 6) Which is the most appropriate way to use CSS for website ?
a) inline b) internal c) external d) none of these
- 7) Which tag is used to apply text level formatting ?
a) <text> b) c) <div> d) none of these



- 8) Using which tag we insert JavaScript in HTML page ?
- a) <JavaScript type="text/javascript">
 - b) <script type="text/javascript">
 - c) <JScript type="text/javascript">
 - d) <HTMLScript type="text/javascript">
- 9) We can write procedure by using java script
- a) true
 - b) false
 - c) can't say
 - d) none of these
- 10) DOM stands for
- a) Data Object Model
 - b) Document Object Model
 - c) Definition Object Model
 - d) None of these
- 11) Legal way to call procedure in VBScript
- a) GreetUser "Bill"
 - b) Call GreetUser("Bill")
 - c) GreetUser("Bill")
 - d) Both a) and b)
- 12) Which is the correct to declare variable in VBScript ?
- a) Dim orderTotal As Currency
 - b) Dim orderTotal
 - c) Var orderTotal
 - d) Int orderTotal
- 13) Legal ways to call function in VBScript
- a) Total=AddNum(10,20)
 - b) Call AddNum(10,20)
 - c) AddNum(10,20)
 - d) All of these
- 14) VBScript is _____ scripting language.
- a) Strongly typed
 - b) Loosely typed
 - c) Both a) and b)
 - d) None of these



- 15) Which statement is true about Entities in XML ?
- a) Entities are variables used to define shortcuts to standard text
 - b) Entity references are references to entities
 - c) Both a) and b)
 - d) None of these
- 16) In ASP, if you want to set a timeout interval that is shorter or longer than the default, use the _____ property.
- a) Time out
 - b) TimeIn
 - c) Abandon
 - d) None of these
- 17) How do you get information from a Form that is submitted using the “get” method ?
- a) Request.queryString
 - b) Request.form
 - c) Response.get
 - d) Request.get
- 18) XML is not replacement for HTML
- a) true
 - b) false
 - c) can't say
 - d) none of these
- 19) XML data source object (DSO) is
- a) Microsoft ActiveX
 - b) XSLT
 - c) DTD
 - d) None of these
- 20) XML designed to
- a) transport data
 - b) store data
 - c) both a) and b)
 - d) none of these

SECTION – I

2. Write short answer on **(any 4)** : **(5×4=20)**
- 1) Text formatting properties of CSS.
 - 2) Looping structure of java script.
 - 3) Classes in CSS.
 - 4) Arrays of java script.
 - 5) World Wide Web.



3. A) Write a java script program to validate travel booking form with proper validation. **10**
B) Explain image and image map tag with example. **10**

OR

- B) Explain inline, internal and external style sheet with example. **10**

SECTION – II

4. Write short answer on **(any 4)** : **(5×4=20)**

- 1) Control structure of VB script.
- 2) Features of XML.
- 3) Server object in ASP.
- 4) Document source object.
- 5) XML XSLT.

5. A) Write a program in ASP to count visitors of webpage. **10**
B) Explain DTD and schemas with an example. **10**

OR

- B) Application and session in ASP with example. **10**
-



Seat No.	
----------	--

T.Y.M.C.A. (Part – I) (Under Faculty of Engineering) Examination, 2015
INTERNET TECHNOLOGY

Day and Date : Saturday, 9-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instructions: 1) To the point **answer carries weightage.**
2) Q. 3 a) and Q. 5 a) are **compulsory.**

1. Select the correct alternative : **20**
- 1) A _____ is stored as temporary information on the client machine, on behalf of the server.
a) Cookie b) Session c) Service d) Servlet
 - 2) The servlet container calls the _____ method either during load time or at the first request.
a) doPost() b) destroy() c) doGet() d) init()
 - 3) MIME stands for
a) Multipurpose Internet Mail Extension
b) Multiple Internet Mail Extension
c) Multipurpose Intranet Mail Extension
d) Multiple Intranet Mail Extension
 - 4) _____ technique from the payment method uses a blind signature for security purpose during transaction on e-commerce site.
a) E-cash b) E-cheque
c) Credit card d) Smart card
 - 5) _____ card from the following supports 3i system.
a) Smart b) Debit
c) ATM d) None of these



- 6) Substitution and Transposition technique belongs to _____ key encryption.
- | | |
|---------------------|------------------|
| a) Private | b) Public |
| c) Digitized Public | d) None of these |
- 7) The servlet is terminated using _____ method.
- | | | | |
|------------|-----------|---------------|--------------|
| a) empty() | b) init() | c) shutdown() | d) destroy() |
|------------|-----------|---------------|--------------|
- 8) _____ is a connectionless protocol used to send data quickly to the receiver.
- | | | | |
|--------|--------|--------|------------------|
| a) UDP | b) TCP | c) SET | d) None of these |
|--------|--------|--------|------------------|
- 9) In B2C e-commerce B and C stands for _____ and _____ respectively.
- | | |
|---------------------------|----------------------|
| a) Business and Customer | b) Busy and Customer |
| c) Business and Collector | d) None of these |
- 10) _____ is the protocol which support multimedia application having RSVP in it used for real-time multimedia application.
- | | |
|---------|---------|
| a) IPV3 | b) IPV5 |
| c) IPV4 | d) IPV6 |
- 11) What will be the output of the following code ?
- ```
<?php
$var = 10;
function fn ()
{
$var = 20;
return $var;
}
fn ();
echo $var;
?>
```
- |                       |                 |
|-----------------------|-----------------|
| a) 10                 | b) 20           |
| c) Undefined Variable | d) Syntax Error |



- 12) Study following steps and determine the correct order.
- 1) Open a connection to MySql server
  - 2) Execute the SQL query
  - 3) Fetch the data from query
  - 4) Select database
  - 5) Close connection
- a) 1, 4, 2, 3, 5
  - b) 4, 1, 2, 3, 5
  - c) 1, 5, 4, 2, 1
  - d) 4, 1, 3, 2, 5
- 13) The extension for jsp file is \_\_\_\_\_
- a) .java
  - b) .jsp
  - c) .javascript
  - d) all of these
- 14) Which of the following delimiter syntax is PHP's default delimiter syntax ?
- a) <? php ?>
  - b) <% %>
  - c) <? ?>
  - d) <script language="php"> </script>
- 15) Which of following function return 1 when output is successful ?
- a) print ( )
  - b) echo ( )
  - c) both
  - d) none
- 16) Which of the following attribute is needed for file upload via form ?
- a) enctype='multipart/form-data'
  - b) enctype='singlepart/data'
  - c) enctype='file'
  - d) enctype='form-data/file'
- 17) \_\_\_\_\_ attribute of include directive is used to include the file in the JSP page.
- a) File
  - b) Page
  - c) Session
  - d) Get page
- 18) Pick odd man out.
- a) forward
  - b) application
  - c) response
  - d) exception
- 19) Pick odd man out.
- a) jsp:forward
  - b) jsp:plugin
  - c) jsp:pagedirect
  - d) jsp:include
- 20) What will be the output of following code ?
- ```
<?php $a = 10;  
echo 'Value of a = $'; ?>
```
- a) Value of a = 10
 - b) Value of a = \$a
 - c) Undefined
 - d) None of these



2. Write notes on (**any four**) : **20**
- a) HTTP
 - b) Brief History of Web
 - c) URL
 - d) Web System Architecture
 - e) Authentication.
3. a) Write a program in servlet to count number of times user has accessed the same page. **10**
- b) Define e-commerce. Explain types of e-commerce with example in detail. **10**
- OR
- b) Define encryption. Explain Private, Public and Hybrid key encryption in detail. **10**
4. Write notes on (**any four**) : **20**
- a) Exception and Session Object in JSP
 - b) Include and Taglib Directive in JSP
 - c) Scripting elements in JSP
 - d) Object Oriented PHP
 - e) Sending mail in PHP.
5. a) Assume a suitable structure of employee and write a program in PHP to insert a new record in employee table. **10**
- b) List and explain any three JSP action elements with example. **10**
- OR
- b) Define array. Explain any nine array functions in PHP with example. **10**
-



Seat No.	
-----------------	--

**T.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
NETWORK ADMINISTRATION**

Day and Date : Tuesday, 12-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instructions : Figures to the *right* indicate **full** marks.

SECTION – I (50)

1. MCQ/Objective Type Question Paper. 10

- 1) Encoding structure, called TLV, denoting type, _____, and value components of the structure.
a) Width b) Length c) Time d) None
- 2) The lower _____ layer controls the access and transmittal of data to the physical layer in an algorithmic manner.
a) MAC b) Session c) Network d) Data link
- 3) In ASN, 1 symbol ::= =
a) Defined as or assignment b) Alternatives or options
c) Definition of object d) Range
- 4) The OBJECT-IDENTITY macros is used to define information about an _____ assignment.
a) TYPE NOTATION b) OBJECT IDENTITY
c) OBJECT ENTITY d) OBJECT IDENTIFIER
- 5) The organizational model describes the components of network management and their
a) relationships b) maintenance c) behavior d) none of these
- 6) The Network _____ is concerned with establishing and administering

P.T.O.



- overall goals, policies, and procedures of network management.
- a) Management
 - b) Organization
 - c) Administration
 - d) All of these
- 7) The _____ model specifies the information base to describe managed objects and the relationship between managed objects.
- a) organizational
 - b) communication
 - c) information
 - d) SNMP
- 8) Process initiates a transaction to run an application in either a local or a remote processor is called the
- a) Server
 - b) client
 - c) agent
 - d) user
- 9) The functional model components of OSI model addresses _____ oriented applications.
- a) user
 - b) client
 - c) receiver
 - d) server
- 10) The information model is concerned with the structure and _____ of information.
- a) data
 - b) maintain
 - c) storage
 - d) maintenance

SECTION – II

MCQ.

10

- 11) PDU stands for
- a) Private data unit
 - b) Protocol data unit
 - c) Profile data unit
 - d) None of these
- 12) The get-request message is generated by _____ process.
- a) Manager
 - b) Agent
 - c) Object
 - d) None of these
- 13) SNMP access policy is pairing of SNMP community and
- a) Data profile
 - b) Protocol profile
 - c) SNMP community profile
 - d) All of these
- 14) RMON1 performs numerous functions at _____ layer.
- a) Application
 - b) Session
 - c) Transport
 - d) None of these



- 15) The enumeration value of createRequest state in Entrystatus data type is
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- 16) The 'hostControlTable' belongs to _____ group.
 - a) Filter
 - b) Host
 - c) Statistics
 - d) None of these
- 17) The filter group is used to filter _____ to be captured based on logical expressions.
 - a) Data
 - b) Packets
 - c) Process
 - d) All of these
- 18) In ATM RMON, ATM stands for
 - a) Asynchronous Time Management
 - b) Asynchronous Transfer Method
 - c) Asynchronous Transfer Mode
 - d) Asynchronous Time Mode
- 19) _____ command in unix measures the performance of gateways.
 - a) ethereal
 - b) iptrace
 - c) getethers
 - d) none of these
- 20) _____ tool captures SNMP packets going across the segment and stores them for later analysis.
 - a) SNMP sniff
 - b) SNMP set
 - c) SNMP walk
 - d) SNMP trap

SECTION – I

- 2. Write short note on **(any 4)** : **20**
 - a) Managed network
 - b) Encoding structure
 - c) Current status and future of network management
 - d) SNMP model
 - e) Challenges of IT manager.

- 3. Answer the following : **20**
 - a) Explain SNMPv1 information model in detail
 - b) Explain macros and functional model in detail.

OR

- b) Explain communication protocol and standards in detail.



SECTION – II

4. Write short note on **(any 4)** : **(4×5=20)**
- a) SNMP Access Policy
 - b) SNMP GetRequest-PDU operation (for system group)
 - c) RMON MIB
 - d) Protocol analyzer
 - e) SNMP command line tools.
5. a) Explain Architectural model in SNMP Communication model in detail. **10**
- b) Draw and explain RMON 1 Groups and functions in detail. **10**
- OR
- c) Discuss network status monitoring and routing tools in detail. **10**
-



Seat No.	
----------	--

**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
DISTRIBUTED DATABASE (Elective – II)**

Day and Date : Thursday, 14-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

1. Choose the correct answer : 20
- 1) $U(RBS) \rightarrow U(R) \cup U(S)$, is called
 - a) Factorization
 - b) Distributivity
 - c) Associativity
 - d) Idempotence
 - 2) Decompile consist in transforming a program written in a procedural language into an equivalent set of _____ language.
 - a) Low level
 - b) Nonprocedural
 - c) High level
 - d) None of these
 - 3) _____ consist of determining which data must be accessed at which sites and which data files must consequently be transmitted between sites.
 - a) Local optimization
 - b) Global optimization
 - c) Both
 - d) None of these
 - 4) Unary operations which apply to the same fragment are collected into programs called
 - a) Query optimization
 - b) Fragment reducer
 - c) Critical region
 - d) None of the above
 - 5) In optimization graph nodes represents
 - a) Reduced fragments
 - b) Joins
 - c) Unions
 - d) Cartesian
 - 6) Two types of horizontal fragmentation called primary and _____
 - a) Derived
 - b) Secondary
 - c) Minterm
 - d) None of these



- 7) _____ is used to denote non redundant copy of the entire distributed database upon which the query is executed.
- a) Materialization
 - b) Fragment
 - c) Schema
 - d) Both b) and c)
- 8) At the top of distributed database architecture there is _____ schema.
- a) Global
 - b) Allocation
 - c) Fragmentation
 - d) None of these
- 9) Which is the features of distributed database ?
- a) Efficient
 - b) Redundancy
 - c) Data independence
 - d) All of the above
- 10) Objectives of the design of data distribution.
- a) Work load distribution
 - b) Availability
 - c) Reliability
 - d) All of these
- 11) Serial radiability algorithms rely on the assumption that whether each site is _____ (operational) or _____ (failed).
- a) High, low
 - b) Up, down
 - c) Higher, lower
 - d) Down, up
- 12) Which of the following is not true reason of failure in centralized database ?
- a) Failure without loss of information
 - b) Failure with loss of volatile storage
 - c) Failure with loss of non-volatile storage
 - d) Failure with loss of secrete storage
- 13) A buffer pool is do
- a) Store old page till the progress
 - b) Store new page
 - c) Store unused pages
 - d) Store not anything
- 14) NLDD stands for
- a) Non-Local Deadlock Detector
 - b) Non-Link Deadlock Detector
 - c) Nested Local Deadlock Detector
 - d) None of these



- 15) Location transparency allows for which of the following ?
- a) Users to treat the data as if it is at one location
 - b) Programmers to treat the data as if it is at one location
 - c) Managers to treat the data as if it is at one location
 - d) All of the above
- 16) An extreme case of multiple failure is a _____ failure, where all sites are down.
- a) Partial
 - b) Abort
 - c) Total
 - d) Site
- 17) A transaction manager is which of the following ?
- a) Maintains a log of transactions
 - b) Maintains before and after database images
 - c) Maintains appropriate concurrency control
 - d) All of the above
- 18) A _____ is an atomic unit of execution.
- a) Integrity
 - b) Recovery
 - c) Concurrency control
 - d) Transaction
- 19) The _____ controllers method aims at exploiting for reducing communication costs.
- a) Hierarchical
 - b) Global
 - c) Centralized
 - d) Local
- 20) Atomicity requires that if a transaction is interrupted by a failure, its _____ results are undone.
- a) Full
 - b) Mixed
 - c) Partial
 - d) All of these



SECTION – I

2. Write short notes on **(any 4)** : **(5×4=20)**
- A) Distribution transparency for update application.
 - B) Integrity constraints in distributed databases.
 - C) Distributed database management system.
 - D) Vertical fragmentation.
 - E) Use of semi-join programs for join queries.
3. A) Explain architecture for distributed databases in detail. **10**
- B) Explain parametric queries in detail. **10**
- OR
- B) What is fragmentation ? Explain horizontal and mixed fragmentation. **10**

SECTION – II

4. Write short note on **(any 4)** : **20**
- A) Site to site protection
 - B) ACID
 - C) Reliability
 - D) Two phase commitment protocol
 - E) Logs.
5. A) What are the failures in centralized databases ? **10**
- B) Explain concurrency control based on timestamps. **10**
- OR
- B) Write note on check points and cold restart. **10**
-



Seat No.	
-----------------	--

FY MCA (Faculty of Engg.) (Part – I) Examination, 2015 DISCRETE MATHEMATICAL STRUCTURE

Day and Date : Tuesday, 12-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

Instructions: 1) Draw diagram *wherever* necessary.
2) Figure to the **right** indicate **full** marks.

MCQ/Objective Type Questions

Duration : 30 Minutes

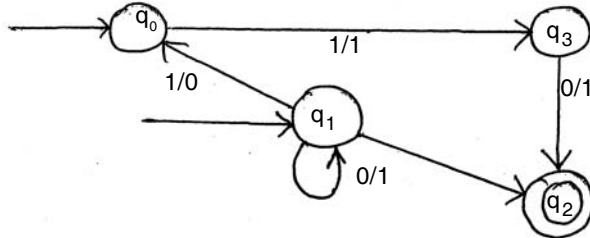
Marks : 20

1. Choose correct alternative.

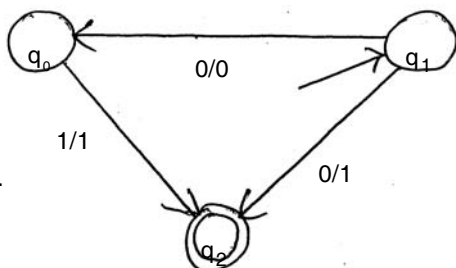
- 1) A vertex is pendant if and only if it has degree
 - a) 0
 - b) 1
 - c) more than 1
 - d) none of these
- 2) The union of the set {1, 3, 4} and {1, 5} is the set
 - a) {1}
 - b) {1, 3, 4, 5}
 - c) {}
 - d) none of these
- 3) Two sets are called disjoint if there _____ is the empty set.
 - a) union
 - b) difference
 - c) intersection
 - d) none of these
- 4) When a directed graph has no loops and has no multiple edges it is called
 - a) simple directed graph
 - b) undirected graph
 - c) tree
 - d) none of these
- 5) A DAG is a
 - a) Directed graph
 - b) Undirected graph
 - c) Directed acyclic graph
 - d) none of these
- 6) A relation R on a set A is called _____ if $(a, a) \in R$ for every element $a \in A$.
 - a) reflexive
 - b) transitive
 - c) irreflexive
 - d) none of these
- 7) The dual of $(a \cup b) \cap a$ is
 - a) $(a \cap b)$
 - b) $(a \cap b) \cup a$
 - c) $(a \cup b)$
 - d) none of these
- 8) Determine which of the following set is finite
 - a) {odd numbers}
 - b) {months in year}
 - c) {even numbers}
 - d) none of these
- 9) Let A and B two sets difference of A and B denoted by
 - a) $A - B$
 - b) $A \cup B$
 - c) $A \cap B$
 - d) none of these
- 10) The difference of {2, 3} and {2, 5, 6} is the set
 - a) {2, 3}
 - b) {3}
 - c) {5, 6}
 - d) none of these



- 11) If L is regular then L^T is _____
 a) also regular b) regular grammar c) regular expression d) not grammar
- 12) The final states of the following Transition System is/are _____



- a) q_2 and q_3 b) q_2 c) q_3 d) q_0 and q_1
- 13) Any set L accepted by a finite automaton M is represented by a
 a) regular expression b) regular c) regular grammar d) none of these
- 14) Representation of a finite automaton can be done by _____
 a) 5-tuple $(Q, \Sigma, \delta, q_0, F)$ b) five-tuple $(F, \Omega, \lambda, \gamma, \tau)$
 c) six-tuple $(\pi, \Omega, \lambda, \delta, F, q_0)$ d) none of the above
- 15) A Mealy machine is a _____
 a) six-tuple $(Q, \Sigma, \Delta, \delta, \lambda, q_0)$ b) five-tuple $(\Sigma, \Delta, \delta, \lambda, q_0)$
 c) five-tuple $(\pi, \Omega, \lambda, \gamma, \tau)$ d) none of the above
- 16) Final state is also known as _____
 a) accepting state b) termination state c) rejection state d) all of the above
- 17) Which of the following problems are decidable ?
 1) Does a given program ever produce an output ?
 2) If L is a context-free language, then is L' (complement of L) also context-free ?
 3) If L is a regular language, then is L' also regular ?
 4) If L is a recursive language, then, is L' also recursive ?
 a) 1, 2, 3, 4 b) 1, 2 c) 2, 3, 4 d) 3, 4
- 18) The initial states of the given Transition system is/are _____



- a) q_0 b) q_1 c) q_0 and q_1 d) none of these
- 19) Any set represented by a regular expression is called a
 a) set b) regular expression
 c) regular grammar d) regular set
- 20) _____ of the certain sets can be shown using Pumping Lemma.
 a) not regular b) regular expression c) regular d) none of these



SECTION – I

2. Write short note on **(any 4)** : **20**
- A) Explain graph representation.
 - B) Explain weighted and complete graph.
 - C) Explain partial order relation.
 - D) Explain travelling salesman problem.
 - E) Explain basic set operations.
3. A) What is function ? Explain types of functions with an example. **10**
- B) What is graph ? Explain types of graph with an example. **10**

OR

- B) What is tree ? Explain Binary and Spanning tree with an example. **10**

SECTION – II

4. Write short note on **(any 4)** : **20**
- A) Explain Transition Systems with an example.
 - B) Define Mealy Machine. Explain it with neat diagram.
 - C) Construct a DFA accepting all strings w over $\{0, 1\}$ such that the number of 1's in w is $3 \pmod 4$.
 - D) Write short note on Applications of Pumping Lemma.
 - E) Find the sets represented by the following regular expressions.
 - a) $(a + b)^* (aa + bb + ab + ba)^*$
 - b) $(aa)^* + (aaa)^*$
 - c) $a + b (a + b)^*$
5. A) Write long answer on Acceptability of a string by a Finite Automaton with an example. **10**
- B) Describe the following sets by regular expression : **10**
- a) $L_1 =$ the set of all strings of 0's and 1's ending in 00.
 - b) $L_2 =$ the set of all strings of 0's and 1's beginning with 0 and ending with 1.
 - c) $L_3 = \{A, 11, 1111, 111111, \dots\}$.

OR

- B) Explain in detail Simplification of Context-free Grammars and Construction of Reduced Grammars. **10**
-



Seat No.	
----------	--

**F.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
OPERATING SYSTEM**

Day and Date : Wednesday, 6-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

Instructions : 1) Figures to the **right** indicate **full** marks.
2) **Q. 3 A and Q. 5 A are compulsory.**

1. Multiple choice questions.

20

- 1) A _____ is a collection of related information defined by it's creator.
a) record b) file c) group d) relation
- 2) _____ provide an interface to the services made available by an operating system.
a) System cells b) Semaphores
c) Communication d) monitors
- 3) A _____ is a batch-system concept.
a) control card b) data card c) cable card d) data control
- 4) A _____ is memory that is dynamically allocated during process run time.
a) heap b) section c) queue d) secondary
- 5) A process control block also called as _____
a) task control block b) task management block
c) process management block d) task process block
- 6) The _____ system call loads a binary file into memory and starts it's execution.
a) load () b) exec () c) execlp () d) ex ()
- 7) The _____ selects a process from the processes in memory that are ready to execute and allocates the CPU to that process.
a) selector b) scheduler
c) process control block d) none of these



- 8) Under _____ scheduling, once the CPU has been allocated to a process, the process keeps the CPU until it releases the CPU either by terminating or by switching to the waiting state.
- a) CPU
b) preemptive
c) nonpreemptive
d) process
- 9) The value of a _____ semaphore can range only between 0 and 1.
- a) counting b) binary c) mutual d) none of these
- 10) _____ are prevented by requiring that critical regions be protected by locks.
- a) mutual exclusion b) race conditions
c) semaphores d) none of these
- 11) Which of the following condition is required for deadlock to be possible ?
- a) mutual exclusion b) hold and wait
c) no preemption d) all of these
- 12) A system is in the safe state if
- a) the system can allocate resources to each process in some order and still avoid a deadlock
b) there exists a safe sequence
c) both a) and b)
d) none of the above
- 13) Deadlock prevention is a set of methods
- a) to ensure that at least one of the necessary conditions cannot hold
b) to ensure that all of the necessary conditions do not hold
c) to decide if the requested resources for a process have to be given or not
d) to recover from a deadlock
- 14) A deadlock avoidance algorithm dynamically examines the _____, to ensure that a circular wait condition can never exist.
- a) resource allocation state b) system storage state
c) operating system d) resources
- 15) A memory buffer used to accommodate a speed differential is called
- a) stack pointer b) cache
c) accumulator d) disk buffer



- 16) The page table contains
 - a) base address of each page in physical memory
 - b) page offset
 - c) page size
 - d) none of these
- 17) To create a file the necessary steps are
 - a) allocate the space in file system
 - b) make an entry for new file in directory
 - c) both a) and b)
 - d) none of these
- 18) In the two level directory structure
 - a) each user has his/her own user file directory
 - b) the system has its own master file directory
 - c) both a) and b)
 - d) none of these
- 19) _____ specifies user names and the types of access allowed for each user.
 - a) ACL b) BPL c) TCL d) None of these
- 20) To increase efficiency most file systems group blocks together into larger chunks called as _____
 - a) inodes b) arrays c) blocks d) clusters

SECTION — I

2. Write short note on (**any 4**) :

20

- 1) I/O structure
- 2) Operating system services
- 3) Buffering
- 4) Scheduling criteria
- 5) The Bounded-Buffer Problem.



3. A) Explain remote procedure call in detail. **10**
B) How system calls are used ? Explain with example. **10**
OR
B) Explain Round-Robin Scheduling algorithm in detail. **10**

SECTION – II

4. Write short note (**any 4**) : **20**
1) Necessary conditions for deadlock.
2) Base and limit registers.
3) FIFO page replacement.
4) File attributes.
5) FCFS disk scheduling.
5. A) Explain deadlock avoidance. **10**
B) Explain how dynamic relocation is done using proper diagram. **10**
OR
B) Write a note on linked allocation of disk space. **10**
-



Seat No.	
-------------	--

**F.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
OBJECT ORIENTED PROGRAMMING USING C++**

Day and Date : Friday, 8-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instructions : 1) *Figures to the right indicates marks.*
2) *Q. 3 A and Q. 5 A are compulsory.*
3) *Write a program if necessary.*

1. Multiple choice questions :

20

- 1) The term _____ means the ability to take many forms.
 - a) Abstraction
 - b) Inheritance
 - c) Encapsulation
 - d) Polymorphism
- 2) Which of the following statement is correct regarding destructor of base class ?
 - a) Destructor of base class should always be public
 - b) Destructor of base class should always be virtual
 - c) Destructor of base class should not be virtual
 - d) Destructor of base class should always be private
- 3) Which of the following access specifier is used in a class definition by default ?
 - a) Protected
 - b) Public
 - c) Private
 - d) Friend
- 4) Which of the following statement is incorrect ?
 - a) Default arguments can be provided for pointers to functions
 - b) A function can have all its arguments as default
 - c) Default argument cannot be provided for pointers to functions
 - d) A default argument cannot be redefined in later declaration
- 5) Which of the following is the correct operator to compare two variables ?
 - a) :=
 - b) =
 - c) equal
 - d) ==



- 6) A struct is the same as a class except that
- a) There are no member functions
 - b) All members are public
 - c) Cannot be used in inheritance hierarchy
 - d) It does have a this pointer
- 7) In which case is it mandatory to provide a destructor in a class ?
- a) Almost in every class
 - b) Class for which two or more than two objects will be created
 - c) Class for which copy constructor is defined
 - d) Class whose objects will be created dynamically
- 8) What is the only function all C++ programs must contain ?
- a) start()
 - b) system()
 - c) main()
 - d) program()
- 9) A friend function to a class, C cannot access
- a) Private data members and member functions
 - b) Public data members and member functions
 - c) Protected data members and member functions
 - d) The data members of the derived class of C
- 10) Which of the following is not a type of constructor ?
- a) Copy constructor
 - b) Friend constructor
 - c) Default constructor
 - d) Parameterized constructor
- 11) We can over load all the C++ operators except the _____ operators.
- a) Scope resolution
 - b) Size operator
 - c) Conditional
 - d) All of these
- 12) Unary operators overloaded by means of member function takes _____
- a) no explicit arguments
 - b) return no explicit values
 - c) both a) and b)
 - d) none of these
- 13) _____ overcomes the problems with type-field solution by allowing the programmer to declare functions in base class that can be redefined in each derived class.
- a) Virtual function
 - b) Member function
 - c) Inline function
 - d) None of these



- 14) A derived class with _____ base class is called single inheritance.
a) Only one b) Many c) None d) None of these
- 15) A class can contain objects of other classes. This is known as _____
a) Containership b) Nesting
c) Both a) and b) d) None of these
- 16) Pointer to objects of a base class type are _____ with pointer to objects of a derived class.
a) Compatible b) Non compatible
c) Comparable d) None of these
- 17) The ios class contains the member functions such as _____ to format the output.
a) width() b) precision() c) fill() d) all of these
- 18) Templates allows us to generate a family of classes to handle _____ data types.
a) Different b) Same
c) Both a) and b) d) None of these
- 19) We can place _____ catch blocks together to catch and handle multiple types of exceptions thrown by a try block.
a) One b) More
c) Two and more d) None of these
- 20) The process of generating a class declaration from a template class and a template argument is called template _____.
a) Instantiation b) Initialization
c) Destruction d) None of these

SECTION – I

2. Write a short note on (any 4) :

20

- 1) Scope resolution operator
- 2) Switch statement
- 3) Inline functions
- 4) Call by reference
- 5) Constructor with default arguments.



3. A) Explain parameterised constructor with example. **10**
B) Explain function overloading with example.

OR

- B) Write a program to print factorial of a given number. **10**

SECTION – II

4. Write a short note on (**any 4**) : **20**
1) Access specifiers
2) Multilevel inheritance
3) Class to basic type conversion
4) This pointer
5) Write a program to find the largest and smallest element of an array.

5. A) Explain polymorphism with example. **10**
B) Define class string. Use overload == operator to compare to strings.

OR

- B) Explain inheritance with its types. **10**
-



Seat No.	
-------------	--

**F.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
MICROPROCESSOR**

Day and Date : Monday, 11-5-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instructions: 1) Figures to the *right* indicate **full** marks.
2) Q. 3 A) and Q. 5 A) are compulsory.

1. MCQ/Objective Type Questions : 20

- 1) The _____ bus is bidirectional.
a) address b) control c) data d) none of these
- 2) The _____ bus carries synchronization and timing signals.
a) control b) address c) data d) I/O
- 3) The _____ register present in microprocessor is used to test for conditions.
a) Accumulator b) PC c) Flag d) SP
- 4) In the implicit addressing mode, address of operand is given in _____.
a) memory b) register c) instruction d) none of these
- 5) In a 3-byte instruction, the first byte specifies the _____.
a) operand b) opcode c) binary d) instruction
- 6) The _____ instruction loads the contents of a memory location into the accumulator.
a) LDA b) MOV c) LDI d) MVI
- 7) 8085 has _____ arithmetic instructions.
a) 10 b) 20 c) 30 d) 14
- 8) _____ is defined as the time taken by the processor to execute an instruction.
a) Instruction set b) Instruction cycle
c) Both of these d) None of these



SECTION – I

2. Write short answer on (**any 4**) : **20**
- 1) 8085 system bus.
 - 2) Features of 8085.
 - 3) Instruction format.
 - 4) Branching instruction.
 - 5) Define following :
 - a) Instruction cycle
 - b) Machine cycle
 - c) T-state.
3. A) Explain block diagram of internal architecture of 8085 microprocessor. **10**
- B) State and explain addressing modes of 8085. **10**
- OR
- B) Explain machine cycle for any instruction from data transfer group. **10**

SECTION – II

4. Solve **any 4** : **20**
- A) Explain in detail various types of Interrupts in 8085.
 - B) Write a short note on IO mode of 8255.
 - C) Explain Serial Communication using SID pin.
 - D) Difference between Synchronous and Asynchronous serial communication.
 - E) Draw the block diagram of 8251 USART.
5. A) Explain the types of IO Addressing in Detail. **10**
- B) Draw and explain in brief the pin diagram of Programmable Peripheral Interfacing (8255). **10**
- OR
- B) Draw a neat timing diagram for Interrupt Acknowledge machine cycle.
-



Seat No.	
----------	--

**F.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
STATISTICAL AND NUMERICAL METHODS**

Day and Date : Wednesday, 13-5-2015

Total Marks : 100

Time : 10.30 a.m. to 1.30 p.m.

- Instructions :** 1) *All questions are compulsory.*
2) *Use of scientific calculator is allowed.*

MCQ/Objective Type Questions

1. Choose the correct alternative : 20
- 1) The error in the Simpson's $1/3^{\text{rd}}$ rule is of the order
a) h b) h^2 c) h^3 d) h^4
 - 2) The rate of convergence of regular falsi method is faster than that of the _____ method.
a) Bisection b) False Position
c) Newton-Raphson d) All of these
 - 3) Gauss elimination method _____ leads to a solution.
a) Sometimes b) Always c) Most of the times d) None
 - 4) Bisection method is based on _____ property.
a) Initial value b) Intermediate value
c) Final value d) None of these
 - 5) The process of finding the value of y corresponding to any value of $x = x_i$ between x_0 and x_n is called
a) Extrapolation b) Interpolation
c) Both (a) and (b) d) Inverse interpolation
 - 6) To solve the system of n -unknowns, the elimination is perform in
a) n step b) $(n - 1)$ steps c) $(n + 1)$ steps d) $(n + 2)$ steps
 - 7) The error in the trapezoidal rule is of the order
a) h^2 b) h^3 c) h d) h^4
 - 8) _____ method the system is reduced to upper triangular matrix.
a) Gauss elimination b) Gauss Jordan
c) Gauss Seidal d) Cramer's



- 9) To find a value near the end of the table use
- a) Newtons forward formula b) Newtons backward formula
c) Finite difference formula d) Infinite difference formula
- 10) The one of the root of equation $\sin x = \frac{1}{x}$ lies between
- a) 1 and 1.5 b) 0 and 1 c) 1.5 and 2 d) 3 and 4
- 11) Two or more events are said to be _____ if the happening or non happening of any one of them, does not affect the happening of others.
- a) dependant b) independent
c) statistically dependent d) none of these
- 12) If two regression coefficients are 0.8 and 1.2, then the value of coefficient of correlation is
- a) 0.9798 b) 0.7989 c) 0.96 d) 2
- 13) Coefficient of correlation depends upon
- a) Change of origin b) Change of scale
c) Change of scale and origin d) Zero
- 14) A binomial distribution on 50 trials has 4 as its standard deviation. This statement is
- a) Valid b) Invalid c) Can not say d) None of these
- 15) For testing of hypothesis in rejection region first we set up
- a) Null hypothesis b) Critical region
c) Alternative hypothesis d) Level of significance
- 16) The result of a random experiment will be called an
- a) Output b) Outcome c) Trial d) None of these
- 17) Which of the following is a two tailed alternative hypothesis ?
- a) $H_1 : \mu = \mu_0$ b) $H_1 : \mu \neq \mu_0$ c) $H_1 : \mu > \mu_0$ d) $H_1 : \mu < \mu_0$
- 18) The value of Chi-square test ranges from
- a) 0 to ∞ b) $-\infty$ to 0 c) 0 to 1 d) -1 to 1
- 19) The total number of possible outcomes of a random experiment is known as the
- a) Favourable events b) Exhaustive events
c) Both a and b d) None of these
- 20) The Chi-square test depends upon
- a) Observed frequencies b) Expected frequencies
c) Degree of freedom d) All of these



SECTION – I

2. Solve **any four** : **(6×4=24)**

1) Evaluate $\int_0^1 \frac{x^2}{1+x^3} dx$ using Simpson's $\frac{1}{3}$ rule.

2) Find a real root of $x^3 - 4x - 9 = 0$ by using bisection method, perform 6 iterations.

3) Solve using Cramer's rule

$$10x + y + 2z = 13 ;$$

$$3x + 10y + z = 14 ;$$

$$2x + 3y + 10z = 15 ;$$

4) Use the method of false position, to find the fourth root of 32 correct to three decimal places.

5) Use Lagrange's interpolation formula to find the value of y when x = 10

$$X : \quad 5 \quad 6 \quad 9 \quad 11$$

$$y : \quad 12 \quad 13 \quad 14 \quad 16$$

6) Write a C program to implement Bisection method.

3. A) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using Simpson's 3/8th and 1/3rd rule. **(8×1=8)**

4. Attempt **any one** : **(8×1=8)**

1) Solve using Gauss elimination method

$$2x + y + z = 10 ; \quad 3x + 2y + 3z = 18 ; \quad x + 4y + 9z = 16 ;$$

2) If $f(1.15) = 1.0723$, $f(1.20) = 1.0954$, $f(1.25) = 1.1180$, $f(1.30) = 1.1401$

Find $f(1.28)$ using Newton's backward formula.

SECTION – II

5. Solve **any four** : **(6×4=24)**

1) Explain the terms in brief :

1) Critical region

2) Standard error

3) Null hypothesis.



- 2) Explain the terms in brief :
- 1) Random experiment
 - 2) Mutually exclusive events
 - 3) Trial and event.
- 3) What are various methods of sampling ? Explain any one of them.
- 4) Why does it pay to bet consistently on seeing 6 atleast once in 4 throws of a die, but not on seeing a double six atleast once in 24 throws with two dice ?
- 5) Seven coins are tossed and the number of heads obtained is noted. The experiment is repeated 128 times and the following distribution is obtained :

No. of Heads :	0	1	2	3	4	5	6	7
Frequency :	7	6	19	35	30	23	7	1

Fit a binomial distribution if the coins are unbiased.

- 6) A Sample of 400 electric bulbs from company A gave the average life 1225 hours with standard deviation 42 hours. Whereas sample of 200 bulbs from company B gave an average life 1265 hours, with standard deviation 60 hours. Can we say that the two companies are producing bulbs of same average X_1 life ?

6. Solve **any one** :

(8×1=8)

- 1) Fit a parabola of second degree to the following data :

x :	1	2	3	4	5
y :	24	27	32	38	45

- 2) A letter of the English alphabet is chosen at random. Calculate the probability that the letter so chosen
- i) is a vowel
 - ii) precedes m and is a vowel
 - iii) follows m and is a vowel.

7. Solve the following :

(8×1=8)

- 1) Find the equations of lines of regression and also the coefficient of correlation from the following data :

x :	62	64	65	69	70	71	72	74
y :	126	125	139	145	165	152	180	208
