



Seat No.	
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**F.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
FUNDAMENTALS OF COMPUTING ENVIRONMENT (Old)**

Day and Date : Monday, 7-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

1. Multiple choice questions : 20

- 1) UNIVAC is _____
 - A) Universal Automatic Computer
 - B) Universal Array Computer
 - C) Unique Automatic Computer
 - D) Unvalued Automatic Computer
- 2) _____ is an interpreter.
 - A) An interpreter does the conversion line by line as the program is run
 - B) An interpreter is the representation of the system being designed
 - C) An interpreter is a general purpose language providing very efficient execution
 - D) None of the above
- 3) Analog computer works on the supply of _____
 - A) Continuous electrical pulses
 - B) Electrical pulses but not continuous
 - C) Magnetic strength
 - D) None of the above
- 4) A kind of serial dot-matrix printer that forms characters with magnetically-charged ink sprayed dots is called _____
 - A) Laser printer
 - B) Drum printer
 - C) Ink-jet printer
 - D) Chan printer
- 5) _____ is the largest computer.
 - A) Mainframe Computer
 - B) Mini Computer
 - C) Micro Computers
 - D) Super Computers
- 6) MSI stands for _____
 - A) Medium Scale Integrated Circuits
 - B) Medium System Integrated Circuits
 - C) Medium Scale Intelligent Circuit
 - D) Medium System Intelligent Circuit



SECTION – II

4. Short notes (**any 4**) : **20**
- a) Multiprogramming
 - b) Simple batch processing
 - c) History of Internet
 - d) Data Transmission Mode
 - e) High Level Language.
5. Answer the following : **20**
- a) What do you mean by Machine Language ? Explain Assembly Language, High Level Language.
 - b) What is networking ? Explain network topologies in detail.
- OR
- b) What is Memory ? Explain Secondary Storage Devices in detail.
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Seat No.	
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**F.Y.M.C.A. (Part – I) (Old) (Under Faculty of Engineering)
Examination, 2015
PROGRAMMING IN C**

Day and Date : Wednesday, 9-12-2015

Total Marks : 100

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

1. Multiple choice questions.

20

- 1) What is the similarity between a structure, union and enumeration ?
A) All of them let you define new values
B) All of them let you define new data types
C) All of them let you define new pointers
D) All of them let you define new structures
- 2) If a variable is a pointer to a structure, then which of the following operator is used to access data members of the structure through the pointer variable ?
A) . B) & C) * D) ->
- 3) Which of the following special symbol allowed in a variable name ?
A) * (asterisk) B) | (pipeline) C) - (hyphen) D) _ (underscore)
- 4) The keyword used to transfer control from a function back to the calling function is
A) switch B) goto C) go back D) return
- 5) If you pass an array as an argument to a function, what actually gets passed ?
A) Value of elements in array B) First element of the array
C) Base address of the array D) Address of the last element of array
- 6) In which stage the following code
`#include<stdio.h>`
gets replaced by the contents of the file `stdio.h`
A) During editing B) During linking
C) During execution D) During preprocessing



- 7) If the two strings are identical, then strcmp() function returns
A) -1 B) 1 C) 0 D) Yes
- 8) Which of the following correctly shows the hierarchy of arithmetic operations in C ?
A) /+*- B) *-/+ C) +-/ * D) /*+-
- 9) Which bitwise operator is suitable for turning off a particular bit in a number ?
A) && operator B) & operator C) || operator D) ! operator
- 10) What function should be used to free the memory allocated by calloc() ?
A) dealloc(); B) malloc (variable _ name, 0)
C) free(); D) memalloc (variable _ name, 0)
- 11) Which of the following cannot be checked in a switch-case statement ?
A) Character B) Integer C) Float D) Enum
- 12) In the following code what is 'P' ?
typedef char *charp;
const charp P;
A) P is a constant B) P is a character constant
C) P is character type D) None of above
- 13) Which of the following function is more appropriate for reading in a multi-word string ?
A) printf(); B) scanf(); C) gets(); D) puts();
- 14) What will the function rewind() do ?
A) Reposition the file pointer to a character reverse
B) Reposition the file pointer stream to end of file
C) Reposition the file pointer to beginning of that line
D) Reposition the file pointer to beginning of file



- 15) 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
- 16) What are the different types of real data type in C ?
 - A) float, double
 - B) short int, double, long int
 - C) float, double, long double
 - D) double, long int, float
- 17) The format identifier ‘%i’ is also used for _____ data type ?
 - A) char
 - B) int
 - C) float
 - D) double
- 18) Which of the following is a User-defined data type ?
 - A) typedef int Boolean;
 - B) typedef enum { Mon, Tue, Wed, Thu, Fri } Workdays;
 - C) struct { char name [10], int age };
 - D) all of the mentioned
- 19) Which of the following cannot be a variable name in C ?
 - A) volatile
 - B) true
 - C) friend
 - D) export
- 20) Which of the following is not possible in C ?
 - A) Array of function pointer
 - B) Returning a function pointer
 - C) Comparison of function pointer
 - D) None of the mentioned

SECTION – I

2. Write short note on (any 4) :

20

- 1) Formatted Input and Output
- 2) Break and continue statements
- 3) Operator precedence
- 4) Bound checking in an array
- 5) Array of pointers.



3. A) What is string ? Write string functions in detail. **10**

OR

A) What is pointer ? Write one program to show pointer to pointer concept. **10**

B) Write a program to show following output. **10**

```
          1
        2   3
       4   5   6
```

SECTION – II

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

- 1) Storage classes
- 2) Features of C preprocessor
- 3) Command line argument
- 4) Union
- 5) Bit fields.

5. A) Write a program to read lower case characters of one file and display it with upper case characters to other file. **10**

OR

A) What is call by value and call by reference ? Explain their difference. **10**

B) What is recursion ? Write a program for Fibonacci series with recursion. **10**



Seat No.	
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F.Y.M.C.A. (Part – I) (Old) Examination, 2015
(Under Faculty of Engg.)
DIGITAL ELECTRONICS

Day and Date : Friday, 11-12-2015
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**.

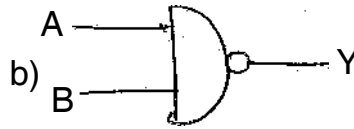
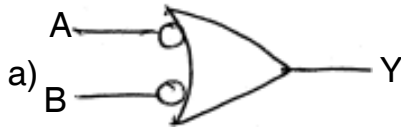
1. Multiple choice questions.

20

- 1) The no. of parity bits in a 12-bit Hamming code is
a) 4 b) 5 c) 6 d) 8
- 2) The binary code of $(73)_{10}$ is
a) 1010001 b) 1000100 c) 1100101 d) 1001001
- 3) The excess-3 code is also known as
a) weighted code b) cyclic redundancy code
c) self complementing code d) algebraic code
- 4) Which of the following statement is true ?
a) $A + \bar{A}B = A$ b) $A(\bar{A} + \bar{B}) = AB$
c) $AB + A\bar{B} = A$ d) $A + C \bar{A}B = CA + CB$
- 5) _____ expression is equivalent to $A \oplus B$.
a) $A \odot \bar{B}$ b) $\bar{A} \odot \bar{B}$ c) $A + \bar{B}$ d) $\bar{A} \oplus B$
- 6) A bubbled NAND gate is equivalent to a _____ gate
a) OR b) AND c) X-OR d) Inverter
- 7) The terms of canonical SOP is called
a) max b) maxterm c) minterm d) min



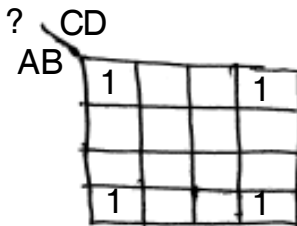
8)  Y is equivalent to



9) Conversion of $A(B + \bar{C})$ into maxterm are

- a) 0, 1, 2, 3, 5 b) 4, 6, 7 c) 0, 1, 2, 3, 5, 6 d) 4, 7

10) Which is the minimised expression for following K-map ?



- a) $\bar{A} + \bar{C}$ b) $\bar{B} + \bar{D}$ c) $A + C$ d) $B + D$

11) How many inputs and outputs does a full subtractor have ?

- a) 2 inputs, 1 output b) 2 inputs, 2 outputs
c) 2 inputs, 3 outputs d) 3 inputs, 2 outputs

12) A combinational logic circuit

- a) must contain flip-flops
b) may contain flip-flops
c) does not contain flip-flops
d) contain latches

13) The output of a logic circuit depends upon the sequence in which the input is applied ? The circuit is

- a) a combinational logic circuit
b) a sequential logic circuit
c) combinational and sequential logic circuit
d) none of these



- 14) A logic circuit that accepts several data inputs and allows only one of them to get through to the output is called
- a) a multiplexer
 - b) a demultiplexer
 - c) a transmitter
 - d) a receiver
- 15) A flip-flop has two outputs, which are
- a) always 0
 - b) always 1
 - c) always complementary
 - d) none of these
- 16) Which of the following flip-flop is used as a latch
- a) J-K flip-flop
 - b) Master-slave flip-flop
 - c) S-R flip-flop
 - d) T flip-flop
- 17) How many states a 6-bit ripple counter can have ?
- a) 6
 - b) 12
 - c) 32
 - d) 64
- 18) The registers which are used to only store the data are called
- a) buffer registers
 - b) shift register
 - c) universal serial register
 - d) none of these
- 19) Asynchronous counters are called as _____ counters.
- a) ripple
 - b) parallel
 - c) both
 - d) none of the above
- 20) The number of flip-flops required for a decade counter are
- a) 3
 - b) 4
 - c) 5
 - d) 10

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

- 1) Don't care condition
- 2) Canonical SOP and POS
- 3) Expand $\bar{a}b + \bar{b}$ to minterm and maxterm
- 4) BCD to binary conversion and viceversa
- 5) De-Morgan's Theorem.

3. A) What is Hamming code ? Explain its working with 9-bit Hamming code. **10**

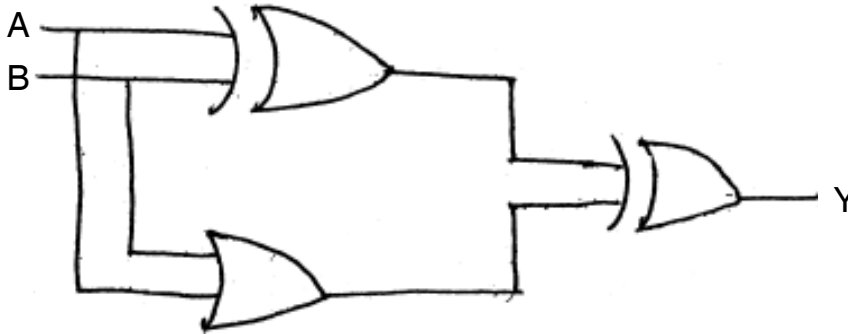
B) NAND and NOR are universal gates. Explain in detail. **10**

OR



B) Redraw the logical expression after simplification.

10



4. Attempt **any 4** :

20

- Explain half-subtractor.
- Write a short note on even parity generator.
- Explain sequential circuit using a block diagram.
- Explain buffer register using a proper logic diagram.
- Write a short note on PIPO shift register.

5. A) Design and explain BCD-to-7 segment decoder.

10

B) Explain edge-triggered J-K flip-flop.

10

OR

B) Explain 2-bit ripple up-down counter using edge-triggered flip-flops.

10



Seat No.	
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**F.Y.M.C.A. (Under Faculty of Engg.) (Part – I) (Old) Examination, 2015
DISCRETE MATHEMATICAL STRUCTURE**

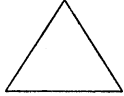
Day and Date : Monday, 14-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

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

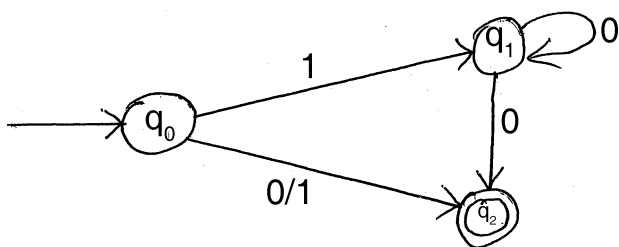
1. Choose correct alternative :

20

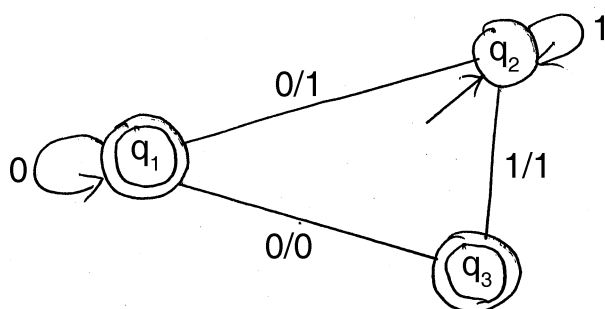
- 1) The union of the sets $\{9, 10\}$ and $\{5, 4\}$ is the set _____
a) $\{9, 10, 5, 4\}$ b) $\{\}$ c) $\{9\}$ d) none of these
- 2) If every element in a set Z is also an element of set B then Z is called _____ of set.
a) set b) subset c) universal d) none of these
- 3) Intersection is denoted by _____
a) \cap b) \cup c) X d) none of these
- 4) A function is said to be _____ if it is one to one.
a) bijection b) injection
c) both a) and b) d) none of these
- 5) The dual of $(a \cap b)$ is
a) $(a \cap b)$ b) $(a \cup b)$
c) both a) and b) d) none of these
- 6) A relation _____ if $(a, a) \in R$ for every $a \in A$.
a) reflexive b) irreflexive c) inverse d) none of these
- 7) A graph is 
a) Complete graph b) Regular graph
c) Null graph d) None of these



- 8) The total number of edges in a complete graph of n vertices is
 - a) $n(n - 1)/2$ b) $n^2 - 1$ c) $n/2$ d) n
- 9) The _____ of vertex v of graph G is the number of edges ending at V .
 - a) outdegree b) indegree c) inoutdegree d) none of these
- 10) A rooted tree T is a tree graph with designated vertex r called _____ of the tree.
 - a) Root b) Node c) Branch d) none of these
- 11) A Moore machine is a _____
 - a) five-tuple $(\Sigma, \Delta, \delta, \lambda, q_0)$ b) six-tuple $(Q, \Sigma, \Delta, \delta, \lambda, q_0)$
 - c) five-tuple $(\pi, \Omega, \lambda, \gamma, \tau)$ d) none of the above
- 12) Pumping Lemma can be used to show that certain sets are _____
 - a) regular b) not regular
 - c) regular expression d) all of these
- 13) In the given transition system _____ is/are the initial states.



- a) q_0 b) q_1 c) q_0 and q_1 d) none of these
- 14) A finite automaton M is represented by a _____ when accepted by any set L .
 - a) regular b) regular expression
 - c) regular grammar d) none of these
- 15) For the following transition system _____ is/are the final states.



- a) q_2 and q_3 b) q_2 c) q_3 d) q_1 and q_3



- 16) _____ is used to represents a finite automaton.
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
- 17) A regular expression is called a _____ when it represents any set.
a) regular set b) regular expression
c) regular grammar d) set
- 18) The deviations in a context-free grammar can be represented using _____
a) graphs b) trees
c) both a) and b) d) none of these
- 19) A deviation $A \Rightarrow w$ is called a _____ if we apply a production only to the leftmost variable at every step.
a) rightmost deviation b) leftmost deviation
c) deviation d) none of these
- 20) L^T is _____ when L is regular.
a) regular grammar b) regular expression
c) also regular d) not grammar

SECTION – I

2. Write short note on (**any 4**) : **20**
A) Explain POSET and Hasse diagram.
B) Explain Cartesian product with an example.
C) Explain inorder and postorder.
D) Explain connected and disconnected graph.
E) Explain set operations.
3. A) What is relation ? Explain reflexive, irreflexive and transitive relation. **10**
B) What is graph ? Explain walk, length of walk and closed walk with an example. **10**
- OR
- B) Explain travelling salesman problem with an example. **10**



SECTION – II

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

20

- A) Write a note on nondeterministic finite state machines.
 B) Explain Moore machine with a neat diagram.
 C) Construct a DFA equivalent to an NFA whose transition table is defined by

State	a	b
q_0	q_1, q_3	q_2, q_3
q_1	q_1	q_3
q_2	q_3	q_2
q_3	--	--

D) Explain in brief Pumping Lemma.

E) Find a regular expression corresponding to each of the following subsets of $\{a, b\}$:

- a) The set of all strings containing exactly 2 a's
 b) The set of all strings containing at least 2 a's
 c) The set of all strings containing at most 2 a's
 d) The set of all strings containing the substring aa.

5. A) Explain in detail regular expression, regular sets and regular grammar.

10

B) Write a long answer on minimization of finite automata with example.

10

OR

B) If G is the grammar $S \rightarrow SbS \mid a$, show that G is ambiguous.

10



Seat No.	
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**F.Y. M.C.A. (Under Faculty of Engg.) (Part – I) (Old) Examination, 2015
PRINCIPLES OF MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR**

Day and Date : Wednesday, 16-12-2015

Total Marks : 100

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

1. Objective type questions : (1×20=20)

1) Management is

- | | |
|-------------------------|-----------------------|
| A) an art | B) a science |
| C) an art and a science | D) an art not science |

2) Principles of Management was contributed by

- | | |
|-----------------|---------------------|
| A) Mary Parkett | B) Lillian Gilberth |
| C) Henry Fayol | D) Elton Mayo |

3) General and Industrial Management was written by

- | | | | |
|------------------|----------|----------------|----------------|
| A) Harold Koontz | B) Terry | C) Louis Allan | D) Henry Fayol |
|------------------|----------|----------------|----------------|

4) Henry Fayol concentrated on

- | | |
|----------------------------|---------------------------|
| A) top management | B) lower level management |
| C) middle level management | D) workers |

5) The principle seeks to ensure unity of action is

- | | |
|-----------------------|---------------------|
| A) Unity of direction | B) Unity of command |
| C) Centralization | D) Scalar chain |

6) Everything increases the importance of superiors role is

- | | |
|-----------------------|---------------------|
| A) Unity of direction | B) Unity of command |
| C) Centralization | D) Scalar chain |

7) The chain of superiors from the highest authority to the lowest level in the organization is

- | | |
|-----------------------|---------------------|
| A) Unity of direction | B) Unity of command |
| C) Centralization | D) Scalar chain |



- 8) Allotment of work to each worker on the basis of the capacity of an average worker functioning in the normal working condition is
- A) social task planning B) scientific task planning
C) not a planning D) scientific organizing
- 9) Study of the movements of both the workers and the machine to eliminate wasteful movement is
- A) fatigue study B) time study
C) motion study D) work study
- 10) The first and foremost function of management is
- A) planning B) organizing
C) controlling D) coordination
- 11) The higher order needs specified by Maslow is considered _____ as per Herzberg.
- A) Motivators B) Hygiene factors
C) Improvement factors D) Advance factors
- 12) OB focuses at 3 levels
- A) Individuals, Organization, Society
B) Society, Organization, Nation
C) Employee, Employer, Management
D) Individual, Groups, Organization
- 13) Success of each organization is depending upon the performance of
- A) Employer B) Management
C) Vendor D) Employee
- 14) Grid Organization Development was developed by
- A) Blake and Mouton B) Elton Mayo
C) F. W. Taylor D) Max Weber
- 15) Maslow says that human beings are full of needs and wants. And these needs will lead to their
- A) Job B) Behavior
C) Attitude D) Motivation



- 16) Contribution/s of human relations movement is/are
 - A) Great Depression
 - B) Labour Movement
 - C) Hawthorne Studies
 - D) All of these
- 17) _____ focuses on how to set goals for people to reach.
 - A) Equity Theory
 - B) Expectancy Theory
 - C) Goal Attain Theory
 - D) Goal Setting Theory
- 18) In _____ leadership, there is a complete centralization of authority in the leader.
 - A) Democratic
 - B) Autocratic
 - C) Free rein
 - D) Bureaucratic
- 19) A process of receiving, selecting, organizing, interpreting, checking and reacting to sensory stimuli or data so as to form a meaningful and coherent picture of the world is
 - A) Attitude
 - B) Thinking
 - C) Perception
 - D) Communication
- 20) _____ is a strategy of job design that increases job depth by meeting employee’s needs for psychological growth.
 - A) Job rotation
 - B) Job enrichment
 - C) Job enlargement
 - D) Job engagement

SECTION – I

- 2. Write a short notes on (any 4) : (4×5=20)
 - 1) Role of manager
 - 2) Kaizen
 - 3) Objects of management
 - 4) Line organization
 - 5) JIT.
- 3. Answer the following : 20
 - a) What is ‘scientific management’ ? Explain the contribution of F.W. Taylor. 10
 - b) What are the different Social Responsibility of Management ? 10

OR

 - b) Explain different levels of management. 10



SECTION – II

4. Write short notes on (**any 4**) : **20**
- a) Communication Process
 - b) Types of Perception
 - c) Individual Behaviour
 - d) Likert's Management System
 - e) Theory 'X' and 'Y'.
5. Answer the following : **20**
- a) Define motivation and explain techniques and theories of motivation in detail.
 - b) Define Personality, Perception and Attitude and explain types of attitude in detail.
- OR
- b) Advantages and disadvantages of A.H. Malsow's need theory in detail.
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Seat No.	
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**F.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
OPERATING SYSTEM**

Day and Date : Tuesday, 8-12-2015

Total Marks : 100

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

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

1. Multiple choice questions.

20

- 1) To start a new process, the shell executes a _____ system call.
a) exec() b) fork() c) exit() d) write()
- 2) One benefit of the _____ approach is ease of extending the operating system.
a) mach b) microkernel c) kernel d) none of these
- 3) A process is more than the program code, which is sometimes known as the _____.
a) data section b) text section c) heap section d) stack section
- 4) _____ allows maximum speed and convenience of communication.
a) Shared memory b) Communication model
c) Message passing d) None of these
- 5) A _____ object allows the server to write to the socket using the routine print() and println() methods for output.
a) Print b) Writer c) PrintWriter d) WritePrinter
- 6) _____ pipes on Windows systems provide a richer communication mechanism than their UNIX counter parts.
a) ordinary b) routine c) labeled d) named
- 7) One measure of work is the number of processes that are completed per time unit, called _____.
a) waiting time b) turnaround time
c) response time d) throughput

P.T.O.



- 8) The _____ scheduling algorithm is designed especially for time-sharing systems.
a) round-robin b) priority c) shortest-job-first d) multilevel queue
- 9) The value of a _____ semaphore can range over an unrestricted domain.
a) counting b) binary c) mutual d) none of these
- 10) The section of code implementing request permission to enter its critical section is the _____.
a) entry section b) exit section c) in-section d) out-section
- 11) The circular wait condition can be prevented by
a) defining a linear ordering of resource types
b) using thread
c) using pipes
d) all of the mentioned
- 12) _____ is the deadlock avoidance algorithm.
a) banker's algorithm b) round-robin algorithm
c) tasker algorithm d) bitmap algorithm
- 13) To ensure no preemption, if a process is holding some resources and requests another resource that cannot be immediately allocated to it _____
a) then the process waits for the resources be allocated to it
b) the process keeps sending requests until the resource is allocated to it
c) the process resumes execution without the resource being allocated to it
d) then all resources currently being held are preempted
- 14) CPU fetches the instruction from memory according to the value of
a) program counter b) status register
c) instruction register d) program status word
- 15) _____ is the address generated by CPU.
a) Physical address b) Absolute address
c) Logical address d) None of the above



- 16) Run time mapping from virtual to physical address is done by
a) memory management unit b) CPU
c) PCI d) none of these
- 17) File type can be represented by
a) file name b) file extension c) file identifier d) none of these
- 18) In the single level directory :
a) all directories must have unique names
b) all files must have unique names
c) all files must have unique owners
d) All of these
- 19) _____ allocation method solves all problems of contiguous allocation.
a) Linked b) Non-contiguous
c) Both of these d) None of these
- 20) The process of dividing a disk into sectors that the disk controller can read and write is _____
a) low-level formatting b) dividing
c) sectoring d) none of these

SECTION – I

2. Write short note on (**any 4**) : **20**
1) A layered operating system
2) Caching
3) Pipes-ordinary, named
4) Multilevel queue scheduling
5) The Bounded-Buffer Problem
3. A) Explain shortest-Job-First Scheduling in detail. **10**
B) Explain interprocess communication in detail. **10**
- OR
- B) What is semaphores ? Explain its usage and implementation. **10**



SECTION – II

4. Write short note (**any 4**) : **20**
- 1) Deadlock Recovery.
 - 2) Fragmentation.
 - 3) LRU page replacement strategy.
 - 4) File direct access method.
 - 5) SSTF disk scheduling.
5. A) Explain the concept of swapping using proper diagram. **10**
- B) Explain in detail directory structure. **10**
- OR
- B) Explain tertiary storage structure in detail. **10**
-



- 6) When the compiler cannot differentiate between two overloaded constructors, they are called
a) overloaded b) destructed c) ambiguous d) dubious
- 7) Which of the following operator can be overloaded through friend function ?
a) \rightarrow b) = c) () d) *
- 8) 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
- 9) It is possible to declare as a friend
a) A member function b) A global function
c) A class d) All of the above
- 10) Member functions, when defined within the class specification
a) Are always inline
b) Are not inline
c) Are inline by default, unless they are too big or too complicated
d) Are not inline by default
- 11) The process of operator overloading involves declaration of the _____ function in the public part of the class.
a) operator b) function c) class d) none of these
- 12) _____ function may be used in the place of member functions for overloading a binary operator.
a) member b) friend c) inline d) none of these
- 13) Operator overloading is one of the important feature of C++ language that enhances its _____
a) exhaustibility b) inheritance
c) properties d) none of these
- 14) A pure virtual function that is not defined in a derived class remain a pure virtual function, so the derived class is an _____
a) class b) template class
c) abstract class d) none of these



- 15) In a multilevel inheritance the constructors will be executed in order of _____
- a) Inheritance
 - b) class written
 - c) both a) and b)
 - d) none of the above
- 16) Polymorphism means one name having _____
- a) single forms
 - b) multiple forms
 - c) both a) and b)
 - d) none of these
- 17) Run time polymorphism is achieved only when _____ is accessed through the base class.
- a) member function
 - b) inline function
 - c) virtual function
 - d) none of these
- 18) A file can be opened in two ways by using the constructor function of the class and using the member function _____ of the class.
- a) fopen()
 - b) open()
 - c) read()
 - d) none of these
- 19) _____ classes and functions eliminate code duplication for different types and thus make the program development easier and manageable.
- a) template
 - b) abstract
 - c) library
 - d) none of these
- 20) The STL consists of three main components _____
- a) container
 - b) algorithm
 - c) iterators
 - d) all of these

SECTION – I

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

20

- 1) Inline functions
- 2) Switch statement
- 3) Destructor
- 4) Scope resolution operator
- 5) Derived data types.



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

OR

- B) Write a program to print following output using for loop. **10**

1
22
333
4444
55555
.....

SECTION – II

4. Write a short note on (**any 4**) : **20**
- 1) Class to basic type conversion
 - 2) Hierarchical inheritance
 - 3) This pointer
 - 4) getline() and write () function
 - 5) Pure virtual function.

5. A) Explain virtual function with example. **10**
B) Explain polymorphism with example.

OR

5. B) Write a program to add two complex numbers using binary operator overloading. **10**
-



Seat No.	
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**F.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
MICROPROCESSOR**

Day and Date : Saturday, 12-12-2015
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 unidirectional.
a) address b) data c) control d) none of these
- 2) 8085 has _____ 8-bit general purpose data registers.
a) 2 b) 8 c) 6 d) 10
- 3) The _____ register is used to sequence the execution on instructions.
a) PC b) SP c) Accumulator d) B
- 4) In a 2-byte instruction, the first byte specifies the
a) data b) operand c) opcode d) byte
- 5) In _____ addressing mode, the operands are specified within the instruction itself.
a) direct b) register c) implicit d) immediate
- 6) In _____ instruction, the contents of accumulator are copied into I/O port specified by operand.
a) OUT b) IN c) PUSH d) POP
- 7) The _____ instruction is used to complement the contents of accumulator.
a) COM b) CMP c) CME d) CMA
- 8) _____ is the time period of a single cycle of the clock frequency.
a) Fetch b) Decode c) T-state d) Instruction
- 9) _____ machine cycle is first cycle of instruction cycle.
a) Operand fetch b) Opcode fetch
c) Memory read d) I/O write
- 10) ALE will be high for _____ T-state during a machine cycle.
a) 1 b) 2 c) 3 d) 4
- 11) _____ interrupts are the interrupts which can be ignored.
a) Non-maskable b) Maskable
c) Vectored d) Non-vectored

P.T.O.



- 12) _____ is a non-maskable interrupt.
a) TRAP b) RST 5.5 c) RST 6.5 d) RST 7.5
- 13) The _____ instruction is used to enable all maskable interrupts.
a) DI b) EI c) EA d) EN
- 14) RIM is used to check whether _____
a) Write operation is done b) Interrupt is masked
c) Both of these d) None of these
- 15) 8255 is a _____ pin IC.
a) 30 b) 20 c) 40 d) 25
- 16) In response to INTR signal, 8085 sends the
a) INTA b) RST 6.5 c) TRAP d) None of these
- 17) In 8255, mode 2 is also known as _____ mode.
a) Simple I/O b) Strobed I/O
c) Bidirectional d) None of these
- 18) In _____ serial communication, start and stop bit for each character is present.
a) Synchronous b) Asynchronous c) Parallel d) None of these
- 19) 8251 IC is also known as
a) PPI b) USART c) 8-bit IC d) None of these
- 20) How many address lines are required for a 2k memory chip ?
a) 10 b) 11 c) 12 d) 13

SECTION – I

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

20

- 1) Features of 8085.
- 2) Arithmetic instructions.
- 3) Demultiplexing of address and data lines.
- 4) Stack related instructions.
- 5) Define following with one example :
 - a) 1 byte instruction
 - b) 2 byte instruction
 - c) 3 byte instruction.



3. A) State and explain addressing modes of 8085. **10**
B) Explain pin description of 8085. **10**
OR
B) Explain machine cycle for any instruction from logical instruction group. **10**

SECTION – II

4. Solve **any 4** : **20**
A) What are the various types of interrupts in 8085 ?
B) Explain Vectored interrupt and non-vectored interrupt.
C) Write short note on Interfacing of Input Device.
D) Explain Serial Communication using SOD pin.
E) Interface a 2K byte ROM with 8085 having starting address 0000H, using NAND gate.
5. A) Write down the difference between IO Mapped IO and Memory Mapped IO. **10**
B) Explain with a neat diagram the Functional block diagram of Programmable interval Timer 8253. **10**
OR
B) Draw and explain in brief the block diagram of Programmable Peripheral Interfacing (8255). **10**
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Seat No.	
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**FYMCA (Part – II) (Under Faculty of Engg.) Examination, 2015
STATISTICAL AND NUMERICAL METHODS**

Day and Date : Tuesday, 15-12-2015

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.*

1. Choose the correct alternative : 20
- 1) Cramer's rule fails if Δ is
a) Zero b) Positive c) Negative d) Non-zero
 - 2) In the regula Falsi method of finding the real root of an equation the curve AB is replaced by
a) Chord AB b) Line AB c) Tangent AB d) Radius AB
 - 3) To find a value near the begin of the table use
a) Newtons forward formula b) Newtons backward formula
c) Finite difference formula d) Infinite difference formula
 - 4) In Gauss elimination method we reduce the coefficient matrix to _____ matrix.
a) Unit b) Upper triangular
c) Lower triangular d) Diagonal
 - 5) Lagrange's interpolation formula can be applied whether the values of x_i are
a) Equally spaced b) Not equally spaced
c) Equally spaced or not d) Same
 - 6) A root of the equation $x^3 - x - 9 = 0$ lies between
a) $(-1, -2)$ b) $(-2, -3)$ c) $(1, 2)$ d) $(2, 3)$
 - 7) In case of bisection method, the convergence is
a) Linear b) Quadratic c) Very slow d) All of these
 - 8) A root of the equation $x - \cos x = 0$ lies between
a) 1 and 2 b) 0 and 1 c) -1 and 0 d) -1 and -2
 - 9) Which of the following is the iteration method for solving the simultaneous equations ?
a) Gauss elimination b) Gauss Jordan
c) Gauss Seidal d) Cramer's



- 10) Gauss elimination method _____ leads to a solution.
a) Sometimes b) Always
c) Most of the times d) None
- 11) Mean and variance are equal for
a) Binomial b) Poisson c) Both a and b d) Normal
- 12) For the null hypothesis $H_0 : \mu = \mu_0$, the alternative hypothesis is
a) $H_1 : \mu < \mu_0$ b) $H_1 : \mu > \mu_0$ c) $H_1 : \mu \neq \mu_0$ d) All of these
- 13) In Chi-square test, the sum of deviations of the observed and expected frequencies is always
a) Zero b) One c) Two d) Three
- 14) The maximum size of type-I error, which we are prepared to risk is known as
a) Hypothesis b) Level of significance
c) Type II error d) Test of significance
- 15) The relation between coefficient of correlation and the two coefficients of regression be
a) $r = \sqrt{b_x b_y}$ b) $r = \sqrt{b_{xy} b_{yx}}$ c) $r = \frac{\sigma_x}{\sigma_y}$ d) None of these
- 16) Standard deviation of Binomial distribution is
a) pq b) npq c) \sqrt{npq} d) \sqrt{pq}
- 17) The product of two coefficients of regressions lies between
a) -1 to 1 b) 0 to 1 c) 0 to ∞ d) $-\infty$ to 0
- 18) 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
- 19) A large sample has size equal to or more than
a) 30 b) 20 c) 500 d) 1000
- 20) If b_{yx} and b_{xy} both are positive then r is
a) Positive b) Negative c) Zero d) None of these



SECTION – I

2. Solve **any four** : **(6×4=24)**

1) Evaluate $\int_0^6 \frac{dx}{1+x^2}$ using Trapezoidal rule.

2) Give the value :

X :	5	7	11	13	17
f(X):	150	392	1452	2366	5202

Evaluate f(9) using Lagrange's method.

3) Solve using Gauss-elimination method :

$$2x - y + 3z = 9; \quad x + y + z = 6; \quad x - y + z = 2$$

4) From the following table, estimate the number of students who obtained marks between 40 and 45 :

Marks	:	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
No. of students :		31	42	51	35	31

5) Write a C program to implement Regula-Falsi method.

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

3. Solve **any one** : **(8×1=8)**

1) Find the root of the equation $x^3 - 4x - 9 = 0$ using bisection method, correct up to 3 decimal place.

2) Compute the value of $\int_0^{\frac{\pi}{2}} \sin x dx$ by using Simpson's $\frac{1}{3}$ rd rule.

4. Solve the following : **(8×1=8)**

Find the value of f(1.6) using Newton's Forward Formula if

X :	1	1.4	1.8	2.2
f(X):	3.49	4.82	5.96	6.5



SECTION – II

5. Solve **any four** : **(6×4=24)**

- 1) Name the various methods of sampling and explain stratified sampling in brief.
- 2) Explain axiomatic probability with suitable example.
- 3) In a year there are 956 births in town A, of which 52.5% were males while in town B there are 450 births. The proportion of males in town B is 0.432. Is there any significant difference in the proportions of male births in two towns ?
- 4) What is conditional probability ? Explain it with suitable example.
- 5) A committee of 4 people is to be appointed from 3 officers of the production department, 4 officers of the purchase department, 2 officers of the sales department and 1 CA. Find the probability of forming the committee in the following manner.
 - i) There must be one from each category.
 - ii) It should have at least one from the purchase department.
- 6) Tickets numbered 1 to 100 are well-shuffled and a number is drawn. What is the probability that the tickets drawn will be :
 - i) an odd number
 - ii) a number 7 or multiple of 7.

6. Solve **any one** : **(8×1=8)**

- 1) Explain Baye’s theorem in detail.
- 2) Investigate the association between the darkness of eye color in father and son from the following data :

Color of Father's eye

Color of Son's eye	Dark	Not Dark	Total
Dark	48	90	138
Not Dark	80	782	862
Total	128	872	1000

7. Solve the following : **(8×1=8)**

Find :

- | | | |
|---------------|----------|------------------------------|
| i) byx | ii) bxy | iii) r from the given data : |
| x : 50 | 45 38 35 | 28 22 |
| y : 58 | 65 70 80 | 95 100 |



Seat No.	
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**F.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
SOFTWARE ENGINEERING**

Day and Date : Thursday, 17-12-2015

Total Marks : 100

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

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

- 1) 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
- 2) System analysis and design phase of Software Development Life Cycle (SDLC) includes which of the following
 - a) Parallel run
 - b) Sizing
 - c) Specification Freeze
 - d) All of the above
- 3) Which of the following is not a diagram studied in Requirement Analysis ?
 - a) Use Cases
 - b) Entity Relationship Diagram
 - c) State Transition Diagram
 - d) Activity Diagram
- 4) Which of the items listed below is not one of the software engineering layers ?
 - a) Process
 - b) Manufacturing
 - c) Methods
 - d) Tools
- 5) Which of these terms are level names in the Capability Maturity Model ?
 - a) Performed
 - b) Repeated
 - c) Optimized
 - d) Both a and c
- 6) The linear sequential model of software development is
 - a) A reasonable approach when requirements are well defined
 - b) A good approach when a working program is required quickly
 - c) The best approach to use for projects with large development teams
 - d) An old fashioned model that cannot be used in a modern context
- 7) Everyone on the software team should be involved in the planning activity so that we can
 - a) reduce the granularity of the plan
 - b) analyze requirements in depth
 - c) get all team members to “sign up” to the plan
 - d) begin design



- 8) Which of the following is not one of the principles of good coding ?
 - a) Create unit tests before you begin coding
 - b) Create a visual layout that aids understanding
 - c) Keep variable names short so that code is compact
 - d) Write self-documenting code, not program documentation
- 9) During project inception the intent of the tasks are to determine
 - a) basic problem understanding
 - b) nature of the solution needed
 - c) people who want a solution
 - d) all of the above
- 10) The best way to conduct a requirements validation review is to
 - a) examine the system model for errors
 - b) have the customer look over the requirements
 - c) send them to the design team and see if they have any concerns
 - d) use a checklist of questions to examine each requirement
- 11) A decision table should be used
 - a) To document all conditional statements
 - b) To guide the development of the project management plan
 - c) Only when building an expert system
 - d) When a complex set of conditions and actions appears in a component
- 12) Which of the following strategic issues needs to be addressed in a successful software testing process ?
 - a) Conduct formal technical reviews prior to testing
 - b) Specify requirements in a quantifiable manner
 - c) Use independent test teams
 - d) Both a and b
- 13) 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



- 14) Which of the following are characteristics of testable software ?
- a) observability
 - b) simplicity
 - c) stability
 - d) all of the above
- 15) 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
- 16) Acceptance tests are normally conducted by the
- a) developer
 - b) end users
 - c) test team
 - d) systems engineers
- 17) Black-box testing attempts to find errors in which of the following categories
- a) incorrect or missing functions
 - b) interface errors
 - c) performance errors
 - d) all of the above
- 18) A new _____ is defined when major changes have been made to one or more configuration objects.
- a) entity
 - b) item
 - c) variant
 - d) version
- 19) Which of the following is not a principle that should guide business process reengineering ?
- a) capture data at each source
 - b) fully redocument legacy processes
 - c) organize around outcomes
 - d) put decision point where work is performed
- 20) _____ is the process of determining whether the output of one phase of software conforms to that of its previous phase.
- a) validation
 - b) verification
 - c) both a and b
 - d) none of above

SECTION – I

2. Solve **any four** :

(5×4=20)

- 1) Spiral model
- 2) Characteristics of software
- 3) Data Dictionary
- 4) Types of decision tables
- 5) Data design.



3. A) Discuss SDLC in brief. 10
B) Explain fact finding techniques in details. 10
OR
B) What is SRS ? Explain components of SRS. 10

SECTION – II

4. Solve **any four** : (5×4=20)
1) System testing
2) SQA Activity
3) Reengineering
4) Features of modern GUI
5) User Interface Design.
5. A) Explain equivalence partitioning and boundary value analysis. 10
B) Explain integration testing and validation testing activity. 10
OR
B) Explain characteristics of maintenance and its side effects. 10
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Seat No.	
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**S.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
DATA STRUCTURE**

Day and Date : Monday, 7-12-2015
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) _____ is a pile in which items are added at one end removed from the other.
A) Stack B) Queue
C) List D) None of the above
- 2) In the _____ traversal we process all of a vertex's descendents before we move to an adjacent vertex.
A) Depth First B) Breadth First
C) With First D) Depth Limited
- 3) In _____ search start at the beginning of the list and check every element in the list.
A) Linear search B) Binary search
C) Hash Search D) Binary Tree search
- 4) Which of the following is not the internal sort ?
A) Insertion Sort B) Bubble Sort C) Merge Sort D) Heap Sort
- 5) What will be the value of top, if there is a size of stack STACK_SIZE is 5 ?
A) 5 B) 6 C) 4 D) None
- 6) Any node is the path from the root to the node is called
A) Successor node B) Ancestor node
C) Internal node D) None of the above



- 7) Which is/are the application(s) of stack ?
- A) Function calls
 - B) Large number arithmetic
 - C) Evaluation of arithmetic expressions
 - D) All of the above
- 8) Which of the following data structure is non-linear type ?
- A) Strings
 - B) Lists
 - C) Stacks
 - D) Tree
- 9) Arrays are best data structures
- A) For relatively permanent collections of data
 - B) For the size of the structure and the data in the structure are constantly changing
 - C) For both of above situation
 - D) For none of the above
- 10) Which of the following data structures are indexed structures ?
- A) Linear arrays
 - B) Linked lists
 - C) Graphs
 - D) Trees
- 11) When does top value of the stack changes ?
- A) Before deletion
 - B) While checking underflow
 - C) At the time of deletion
 - D) After deletion
- 12) A directed graph is _____ if there is a path from each vertex to every other vertex in the digraph.
- A) Weakly Connected
 - B) Strongly Connected
 - C) Tightly Connected
 - D) Linearly Connected
- 13) A _____ is a graph that has weights of costs associated with its edges.
- A) Network
 - B) Weighted graph
 - C) Both A) and B)
 - D) None A) and B)
- 14) _____ is very useful in situation when data have to stored and then retrieved in reverse order.
- A) Stack
 - B) Queue
 - C) List
 - D) Link list



- 15) In linked list, we traverse the list in
A) Only one direction B) Two direction
C) Sometimes A) or B) D) None of these
- 16) A set of trees is called a
A) Graph B) Forest
C) Nodes D) Sub trees
- 17) A graph is a tree if it has properties
A) It is connected B) There are no cycles in the graph
C) A) and B) D) None of these
- 18) Drawback of chaining method
A) Maintaining linked list B) Extra storage space for link fields
C) A) and B) D) Neither A) nor B)
- 19) In _____ sort the number of passes is equal to the number of maximum digits contained in an given array.
A) Radix sort B) Selection sort
C) Insertion sort D) Merge sort
- 20) A binary search tree whose left subtree and right subtree differ in height by at most 1 unit is called _____
A) AVL tree B) Red-black tree
C) Lemma tree D) None of the above

SECTION – I

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

20

- 1) Types of data structures.
- 2) Applications of stack and queue.
- 3) Circular linked list.
- 4) Priority queue.
- 5) Program of linear search.



3. A) What is stack ? How to perform push, pop and display operation in stack ?
Explain in detail. **10**

OR

- A) Write a program of insertion sort and show it's implementation. **10**
B) What is linked list ? Write insert operation for singly linked list and doubly linked list. **10**

SECTION – II

4. Write short note on following (**any 4**) : **20**
- 1) Hashing methods.
 - 2) BFT for graph.
 - 3) Path length.
 - 4) Strictly binary tree.
 - 5) Height balanced tree.

5. A) What is hash collision ? Explain collision resolving techniques in detail. **10**

OR

- A) What is graph ? Write operations on graph. **10**
B) What is binary tree ? Explain tree traversal methods with example. **10**
-



Seat No.	
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S.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
SYSTEM PROGRAMMING

Day and Date : Wednesday, 9-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

1. Choose correct alternatives : 20
- 1) The _____ is a system program which accepts the specification of a program in some specification language.
a) program generator b) linker
c) program counter d) reserve pointer
 - 2) The source program is analyzed during the _____ phase of language processing.
a) Syntax b) Analysis c) Semantic d) Lexical
 - 3) _____ which contains information about identifiers used in the source program.
a) Identifier table b) Symbol table c) Literal table d) None of these
 - 4) The _____ is passed to semantic analysis to determine the meaning of the statements.
a) Intermediate code b) Statement code
c) Analytical code d) Binding code
 - 5) The problem of forward refers is tackled by using a technique called _____.
a) Forward patching b) Back tracking
c) Forward tracking d) Back patching
 - 6) Memory allocation is performed by using a data structure called _____.
a) Location counter b) Program counter
c) Pointer d) Program pointer
 - 7) The START and END statements are _____ to the assembler.
a) Pools b) Literal c) Directives d) Code



- 8) _____ implies generation of statements that are tailored to the requirements of a specific macro call.
- a) Semantic expansion
 - b) Macro definition
 - c) Macro expansion
 - d) None of these
- 9) A _____ points to the first word of the last record in the stack.
- a) Reverse pointer
 - b) Record base pointer
 - c) Reserve pointer
 - d) Base pointer
- 10) A _____ defines either a new operation or a new method of declaring data in a programming language.
- a) System
 - b) Pools
 - c) Macro
 - d) None of these
- 11) Linking is a process of binding _____ to the correct link time addresses.
- a) Internal Location
 - b) External References
 - c) Internal references
 - d) None of the above
- 12) A binding is the association of an attribute of a program entity with _____
- a) Name
 - b) Value
 - c) Type
 - d) None of the above
- 13) An expression tree is _____ syntax tree that represents the structure of an expression.
- a) Abstract
 - b) Concrete
 - c) Private
 - d) Public
- 14) Software tools are _____
- a) User interface
 - b) Program editor
 - c) Both a) and b)
 - d) None of the above
- 15) The _____ program loads a binary program in memory for execution.
- a) Translator
 - b) Linker
 - c) Loader
 - d) All of the above
- 16) Debug monitor provides the facility to _____
- a) Assign a new value to variables
 - b) Display of variables value
 - c) Both a) and b)
 - d) None of the above
- 17) _____ address assigned by the linker while producing a binary program.
- a) Translator origin
 - b) Linked origin
 - c) Load origin
 - d) All of the above
- 18) A _____ is a system that suitably interfaces a program with other programs or human users in its environment.
- a) Assembler
 - b) Compiler
 - c) Software tool
 - d) All of the above



- 19) Screen editor _____
- a) Views entire text at a time
 - b) Screen full text at time
 - c) Both a) and b)
 - d) None of the above
- 20) _____ is a user interface management system.
- a) Menu lay
 - b) Hyper Card
 - c) Window OS
 - d) All of the above

SECTION – I

2. Write short note on (**any 4**) : **20**
- 1) Language processing development tool
 - 2) Binding
 - 3) Simple assembly scheme
 - 4) Expansion time loop
 - 5) Macro definition and call.
3. A) Explain in detail pass-1 assembler with algorithm. **10**
- B) What is fundamental of language processing ? Explain in detail. **10**

OR

- B) Explain design of macro preprocessor in detail. **10**

SECTION – II

4. Write short answer on (**any 4**) : **20**
- 1) Analysis of source program
 - 2) Word processors
 - 3) MS-DOS linker
 - 4) User interface
 - 5) Execution of program.
5. A) Explain in brief N-pass compiler. **10**
- B) Explain program relocation and program linking with an example. **10**

OR

- B) Describe role of debug monitors role in program development. **10**
-



Seat No.	
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**S.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
COMPUTER ORGANIZATION AND ARCHITECTURE**

Day and Date : Friday, 11-12-2015

Total Marks : 100

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

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

1. MCQ/Objective type question paper : 20
- 1) The list of instructions is called _____.
a) Software b) Program c) Coding d) Application
 - 2) During the execution of a program which gets initialized first is _____.
a) MDR b) IR c) PC d) MAR
 - 3) When a subroutine is called, the address of the instruction following the CALL instructions stored in/on the _____.
a) stack pointer b) accumulator
c) program counter d) stack
 - 4) _____ connects an external device to the System Bus.
a) I/O module b) DMA c) ALU d) Control Unit
 - 5) An exception condition in a computer system caused by an event external to the CPU is called _____.
a) Interrupt b) Halt c) Wait d) Process
 - 6) The CPU instructions are written in _____ language.
a) Assembly b) Machine c) High-Level d) C Language



- 7) We usually refer to each of the interface of the external device as a _____.
- a) Socket b) Port c) Input d) Output
- 8) The registers, ALU and the interconnection between them are collectively called as _____.
- a) Process route b) Information trail
c) Information path d) Data path
- 9) A microprogram written as string of 0's and 1's is a _____.
- a) symbolic microinstruction b) binary microinstruction
c) symbolic microprogram d) binary microprogram
- 10) _____ contains the address of an instruction to be fetched.
- a) Instruction Register b) Memory Address Register
c) Program Counter d) Memory Buffer Register
- 11) _____ provide a permanent record on paper of computer output data or text.
- a) Monitor b) VDU c) Printer d) Tape
- 12) _____ are special hardware components between CPU and peripherals to supervise and synchronise all input and output transfers.
- a) Interface units b) Communication
c) Link d) None of these
- 13) In _____ data transfer, the registers in the interface do not share a common clock with the CPU registers.
- a) synchronous b) asynchronous
c) serial d) parallel
- 14) In _____ I/O method, each data item transfer is initiated by an instruction in the program.
- a) programmed b) interrupt-driven
c) DMA d) none of these
- 15) The devices that provide backup storage are called _____.
- a) main memory b) cache memory
c) auxiliary memory d) primary memory



- 16) The dynamic RAM uses _____ to store binary information.
a) flip-flops b) transistors c) MOS d) capacitors
- 17) A memory unit having a storage capacity of 128 words requires _____ number of bits.
a) 4 b) 10 c) 7 d) 8
- 18) In _____ memory, each cell must have storage capability as well as logic circuits for matching contents with external argument.
a) primary b) secondary c) main d) associative
- 19) _____ is achieved by distributing the data among multiple functional units.
a) parallel processing b) sequential processing
c) both of these d) none of these
- 20) In pipelining, each _____ consists of an input register followed by a combinational circuit.
a) pipe b) unit c) segment d) stream

SECTION – I

2. Write short note on (**any 4**) : **20**
a) Register Stack
b) Control unit of basic computer
c) Binary micro program
d) Interrupt cycle
e) Micro instruction format.
3. Answer the following : **20**
a) What is Instruction Code ? Explain with micro programmed example.
b) Explain addressing modes in detail.
- OR
- b) Explain memory reference instructions in detail.



SECTION – II

4. Attempt **any four** : **20**
- a) Explain I/O bus and interface modules.
 - b) Explain IOP.
 - c) Write a short note on asynchronous serial transfer.
 - d) Explain associative memory.
 - e) Explain the concept of virtual memory.
5. A) Illustrate address mapping using pages using an example. **10**
- B) Explain DMA transfer in a computer system using a proper diagram. **10**
- OR
- B) What is pipelining ? Explain using an example. **10**
-



Seat No.	
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**S.Y. M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
COMPUTER NETWORKS**

Day and Date : Monday, 14-12-2015

Total Marks : 100

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

1. Choose the correct alternative : 20

- 1) In OSI network architecture, the routing is performed by
 - A) network layer
 - B) data link layer
 - C) transport layer
 - D) session layer
- 2) _____ OSI layers are covered in the X.25 standard.
 - A) Two
 - B) Three
 - C) Seven
 - D) Six
- 3) _____ might be used by a company to satisfy its growing communications needs.
 - A) front end processor
 - B) multiplexer
 - C) controller
 - D) all of the above
- 4) DNS can obtain the _____ of host if its domain name is known and vice versa.
 - A) Station address
 - B) IP address
 - C) Port address
 - D) Checksum
- 5) _____ is the process of obtaining amplitude of a signal at regular intervals.
 - A) Asynchronous
 - B) Sampling
 - C) Simplex
 - D) Half-Duplex
- 6) _____ is/are the drawbacks of Ring Topology.
 - A) Failure of one computer, can affect the whole network
 - B) Adding or removing the computers disturbs the network activity
 - C) If the central hub fails, the whole network fails to operate
 - D) Both of A and B
- 7) _____ 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

P.T.O.



- 8) With Slotted Aloha, a _____ sends out small clock tick packets to the outlying stations.
- A) distributed clock B) synchronized clock
C) centralized clock D) digital clock
- 9) It is the mode of communication between two devices in which flow of data is bi-directional and it occurs simultaneously is called
- A) Multiplexing B) Simplex C) Half-Duplex D) Full Duplex
- 10) In a _____ topology, if there are n devices in a network, each device has n-1 ports for cables.
- A) Mesh B) Star C) Bus D) Ring
- 11) The network layer concerns with
- A) bits B) frames C) packets D) none
- 12) User datagram protocol is called connectionless because
- A) all UDP packets are treated independently by transport layer
B) it sends data as a stream of related packets
C) both (A) and (B)
D) none
- 13) Which address identifies a process on a host ?
- A) physical address B) logical address
C) port address D) specific address
- 14) _____ is an unreliable connectionless protocol responsible for source-to-destination delivery.
- A) IPv4 B) IPv64 C) IPv88 D) IPv100
- 15) Logical addressing and routing is the function of _____ layer.
- A) Transport B) Network C) Application D) Physical
- 16) Mail services are being made available by _____ layer.
- A) Application B) Network
C) Data link layer D) None



- 17) _____ reduces the memory requirements at some penalty on the path optimality in large networks with large number of routers.
- A) Hierarchical Routing B) Flooding
C) Distance Vector D) None
- 18) TCP provides _____
- A) Process-to-process B) Full-duplex
C) Connection-oriented service D) All the mentioned
- 19) The DNS _____ called a resolver, maps a name to an address or an address to a name.
- A) Server B) Network C) Client D) None
- 20) A substitution cipher replaces _____ character with another character.
- A) Four B) Three C) Two D) One

SECTION – I

2. Write short note on **(any 4)** : **20**
- a) Pure and slotted aloha
 - b) Network operating system
 - c) Ethernet
 - d) PSTN
 - e) Design issues for the layers.
3. Answer the following : **20**
- a) Define Switching. Explain different types of switching.
 - b) Explain error detection and correction codes in detail.
- OR
- b) Explain guided transmission media in detail.



SECTION – II

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

- 1) MIB
- 2) Packet Filter Firewall
- 3) Network security
- 4) TCP
- 5) Subnetting.

5. Write long answers.

- A) Explain Congestion Control Algorithms in detail. **10**
- B) Explain TCP Connection Establishment and Connection Release. **10**

OR

- B) Explain UDP Protocol and its Segment Header with diagram. **10**



Seat No.	
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**S.Y.M.C.A. (Part – I) (New) (Under Faculty of Engg.) Examination, 2015
COMPUTER GRAPHICS**

Day and Date : Wednesday, 16-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

1. Multiple choice questions :

20

SECTION – I

- 1) Graphics and image processing technique used to produce a transformation of one object into another is called
 - a) Animation
 - b) Morphing
 - c) Half toning
 - d) None of the above
- 2) Each pixel has _____ basic color components.
 - a) Two or three
 - b) One or two
 - c) Three or four
 - d) None of these
- 3) The transformation in which an object is move in a minimum distance path from one position to another is called
 - a) Rotation
 - b) Replacement
 - c) Translation
 - d) Scaling
- 4) (2, 4) is a point on a circle that has center at the origin. Which of the following points are also on circle ?
 - a) (2, - 4)
 - b) (-2, 4)
 - c) (-4, -2)
 - d) All of above
- 5) The transformation that produces a parallel mirror image of an object are called
 - a) Rotation
 - b) Reflection
 - c) Translation
 - d) Scaling
- 6) A composite transformation matrix can be made by determining the _____ of matrix of the individual transformation.
 - a) Sum
 - b) Product
 - c) Difference
 - d) None of the above



- 7) Beam penetration method is usually used in _____
- a) LCD
 - b) Raster Scan Display
 - c) Random Scan Display
 - d) DVST
- 8) _____ identifies the picture portions that are exterior to the clip window.
- a) Interior clipping
 - b) Exterior clipping
 - c) Extraction
 - d) None of the above
- 9) The region against which an object is clipped is called a _____
- a) Clip window
 - b) Boundary
 - c) Enclosing rectangle
 - d) Clip square
- 10) Coordinates of viewport are known as _____
- a) World coordinates
 - b) Polar coordinates
 - c) Screen coordinates
 - d) Cartesian coordinates

SECTION – II

- 11) In _____ technique of improving appearance it uses mathematical or probabilistic model.
- a) Image enhancement
 - b) Restoration
 - c) Both a) and b)
 - d) Representation
- 12) _____ is a device for converting the output of the physical sensing device into digital form.
- a) Printer
 - b) Digitizer
 - c) Loader
 - d) None of these
- 13) Digitizing the amplitude value is called _____
- a) Quantization
 - b) Amplitude
 - c) Sampling
 - d) Variation
- 14) The expression for power law (Gamma) transformation is _____
- a) $S = rc - \gamma$
 - b) $S = cr + \gamma$
 - c) $S = Cr^\gamma$
 - d) None of the above
- 15) _____ process involves primitive operation such as reduce noise, contrast enhancement and sharpening.
- a) Low-level
 - b) Mid-level
 - c) High level
 - d) Intermediate level



- 16) _____ processing deals with tool for extracting image component that are useful in representation and description of shape.
- a) Restoration
 - b) Acquisition
 - c) Morphological processing
 - d) Compression
- 17) _____ procedure partitions an image into its constituent parts or objects.
- a) Restoration
 - b) Compression
 - c) Recognition
 - d) Segmentation
- 18) In log transformation the value of r is given as _____
- a) $r \geq 0$
 - b) $r = 0$
 - c) $r < 0$
 - d) $r \leq 0$
- 19) 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
- 20) Dpi stands for _____
- a) Dot per pixel
 - b) Dot per inch
 - c) Double per inch
 - d) Dot pixel inch

SECTION – I

2. Write short note on **(any 4)** : **20**
- 1) Applications of computer graphics and image processing.
 - 2) Advantages and disadvantages of DDA and Bresenham's algorithm.
 - 3) Reflection.
 - 4) 2 D viewing.
 - 5) Interior and exterior clipping.
3. A) Explain Cohen Sutherland line clipping algorithm. **10**
- B) Explain Bresenham's line generation algorithm with its implementation. **10**

OR

- B) Write any one example to show window to viewport coordinate transformation. **10**



SECTION – II

4. Write a short note on **(any 4)** : **(5×4=20)**
- 1) 3D scaling.
 - 2) Restoration and segmentation.
 - 3) Spatial and intensity resolution.
 - 4) Perspective projection.
 - 5) Gamma ray and X-ray imaging.
5. A) Fundamental steps in image processing. **10**
- B) Explain 3D-transformation. **10**
- OR
- B) Explain different intensity transformation function. **10**
-



Seat No.	
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**S.Y. M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
RELATIONAL DATABASE MANAGEMENT SYSTEM (New)**

Day and Date : Friday, 18-12-2015
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. MCQ/Objective type Questions. 20

- 1) In E-R diagrams, relationships are represented by
 - a) ellipses
 - b) rectangles
 - c) diamonds
 - d) double rectangles
- 2) An entity set that does not have sufficient attributes to form a primary key is called as
 - a) relationship set
 - b) weak entity set
 - c) strong entity set
 - d) none of these
- 3) The process of synthesizing multiple entity sets into a higher level entity set based on common features is called as
 - a) specialization
 - b) generalization
 - c) top-down
 - d) none of these
- 4) Database _____ is a snapshot of the data in the database at a given instant in time.
 - a) schema
 - b) instance
 - c) logical
 - d) physical
- 5) Relational algebra is an example of _____ language.
 - a) declarative
 - b) non-procedural
 - c) high level
 - d) procedural



- 6) _____ commands allow users to insert, modify and delete the data in the database.
a) DDL b) DCL c) DML d) DQL
- 7) _____ functions in SQL take a collection of values as input and return a single value.
a) composite b) unary c) aggregate d) none of these
- 8) The use of SQL commands within a host language program is called as
a) T-SQL b) PL-SQL c) QBE d) Embedded SQL
- 9) A multicolumn primary key is called _____ primary key.
a) unique b) union c) candidate d) composite
- 10) In SQL, the _____ statement is used to provide authorization.
a) GRANT b) REVOKE c) AUTH d) None of these
- 11) _____ was proposed as a simpler form of 3NF but is more stricter than 3NF.
a) 2NF b) 4NF c) BCNF d) None of these
- 12) _____ is based on the concept of full functional dependency.
a) 1NF b) 2NF c) 3NF d) BCNF
- 13) _____ is the fastest and most costly form of storage.
a) main memory b) flash memory
c) cache memory d) optical disk
- 14) A _____ interfaces between computer system and the actual hardware of the disk drive.
a) disk controller b) disk system c) jukebox d) none of these
- 15) _____ structure is commonly used for storing variable-length records in a block.
a) heap file b) hashing c) slotted-page d) bitmap
- 16) A _____ is a unit of program execution that accesses and possibly updates various data items.
a) entity b) relation c) transaction d) none of these



- 17) A transaction that completes its execution successfully is said to be
 - a) active
 - b) aborted
 - c) partially committed
 - d) committed
- 18) In two-phase locking protocol, a transaction may release locks but may not obtain any new locks in _____ phase.
 - a) growing
 - b) shrinking
 - c) locked
 - d) none of these
- 19) The computers in a distributed system are also referred as _____
 - a) disks
 - b) PC
 - c) sites
 - d) none of these
- 20) A _____ parallel machine uses thousands of smaller processors.
 - a) coarse-grain
 - b) fine-grain
 - c) both of these
 - d) none of these

SECTION – I

- 2. Write short notes (**any 4**) : **20**
 - 1) Weak entity sets
 - 2) Tuple relational calculus
 - 3) Views in SQL
 - 4) 'Project' operation in relational algebra
 - 5) Authentication.
 - 3. A) Write a note on extended ER features using proper examples. **10**
 - B) Explain in detail set operations in SQL. **10**
- OR
- B) Write a note on sub-queries in SQL using proper example. **10**



SECTION – II

4. Write short notes (**any 4**) : **20**
- 1) Decomposition
 - 2) First Normal Form
 - 3) Tertiary storage
 - 4) Sequential file organization
 - 5) ACID properties of a transaction.
5. A) Explain RAID levels with proper diagram of each level. **10**
- B) What is concurrency control ? Explain locking techniques in detail. **10**
- OR
- B) Explain centralized and client-server system architecture in detail. **10**
-



Seat No.	
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**S.Y.M.C.A. (Part – II) (Under Faculty of Engg.) (New) Examination, 2015
OPERATIONS RESEARCH**

Day and Date : Saturday, 19-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

1. Choose the correct answer : **(20×1=20)**

- 1) A feasible solution to LP problem
 - i) Must satisfy all of the problems constraints simultaneously
 - ii) Need not satisfy all the constraints, only some of them
 - iii) Must be corner point of the feasible region
 - iv) Must optimize the value of the objective function
- 2) At every iteration of the simplex method, for minimization problem, a variable in the current basis is replaced with another variable that has
 - i) a positive $C_j - Z_j$ value
 - ii) a negative $C_j - Z_j$ value
 - iii) $C_j - Z_j = 0$
 - iv) None of the above
- 3) For any primal problem and its dual
 - i) Optimal value of objective functions is same
 - ii) Primal will have an optimal solution if and only if dual does too
 - iii) Both primal and dual cannot be infeasible
 - iv) All of the above
- 4) The occurrence of degeneracy while solving a transportation problem means that
 - i) Total supply equals total demand
 - ii) The solution so obtained is not feasible
 - iii) The few allocations become negative
 - iv) None of the above



- 5) While solving an assignment problem, an activity is assigned to a resource through a square with zero opportunity cost because the objective is to
- Minimize total cost of assignment
 - Reduce the cost of assignment to zero
 - Reduce the cost of that particular assignment problem to zero
 - All of the above
- 6) When sum of losses to one player is equal to the sum of gains to other player in a game, this situation is known as
- Biased game
 - Zero-sum game
 - Fair game
 - All of the above
- 7) To convert \geq inequality constraints into equality constraints, we must
- Add a surplus variable
 - Subtract an artificial variable
 - Subtract a surplus variable and add artificial variable
 - Add a surplus variable and subtract an artificial variable
- 8) The purpose of dummy row or column in assignment problem is to
- Obtain balance between total activities and total resources
 - Prevent a solution from becoming degenerate
 - Provide a means of representing a dummy problem
 - None of the above
- 9) The size of payoff matrix of a game can be reduced by using the principle of
- Game inversion
 - Rotation reduction
 - Dominance
 - Game transpose
- 10) A saddle point exist when
- Maxmin value = minmax value
 - Minmax value = minmin value
 - Maxmin value = maxmax value
 - None of the above
- 11) Which of the following relationship is not true ?
- $W_s = W_q + 1/\mu$
 - $L_s = \lambda W_s$
 - $L_s = L_q + 1/\lambda$
 - $L_q = \lambda W_q$



- 12) A calling population is considered to be infinite when
- i) All customers arrive at once
 - ii) Arrivals are independent of each other
 - iii) Arrivals are independent upon each other
 - iv) All of the above
- 13) In a CPM/PERT network the critical path is the
- i) Lowest path through the network
 - ii) Highest path through the network
 - iii) Shortest path through the network
 - iv) Longest path through the network
- 14) When activity times are uncertain
- i) Assume they are normally distributed
 - ii) Calculate the expected time, using $(t_o + 4t_m + t_p)/6$
 - iii) Use the most likely time
 - iv) Calculate the expected time, using $(t_o + t_m + t_p)/3$
- 15) Replace an item when
- i) average annual cost for n years becomes equal to current /annual running cost
 - ii) next year running cost is more than average cost of nth year
 - iii) present years running cost is less than the previous year's average cost
 - iv) all of the above
- 16) The group replacement policy is suitable for identical low cost items which are likely to
- i) fail over a period of time
 - ii) fail suddenly
 - iii) fail completely and suddenly
 - iv) none of the above
- 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 graphical method of LP problem uses
- | | |
|--------------------------------|-------------------------|
| i) Objective function equation | ii) Constraint equation |
| iii) Linear equation | iv) All of the above |
- 20) The objective of network analysis is to minimize total project cost, is _____
- | | | | |
|----------|----------|----------------|----------|
| i) False | ii) True | iii) Can't say | iv) None |
|----------|----------|----------------|----------|

SECTION – I

2. Attempt **any four** :

(4×5=20)

- 1) Maximize $Z = 3X_1 + 5X_2$
Subject to the constraints
- $X_1 + X_2 \leq 2$
 $2X_1 + X_2 \geq 3$
 $X_1, X_2 \geq 0.$

2) Find the Saddle point (or points) and hence solve the games :

The payoff matrix is given by

		Player B			
		1	2	3	4
Player A	1	-5	2	1	20
	2	5	5	4	6
	3	4	-2	0	-5

3) Write the Dual of following LPP :

- Maximize $Z = 2X_1 + X_2 + 3X_3$
Subject to $X_1 + X_2 + 2X_3 \leq 5$
 $2X_1 + 3X_2 + 4X_3 = 12$
 $X_1, X_2, X_3 \geq 0.$



4) Find IBFS by North West corner method :

	D1	D2	D3	Supply
O1	12	14	15	16
O2	6	10	1	11
O3	18	19	8	15
Demand	13	7	22	

5) Solve the following games :

		Player B	
		I	II
Player A	I	6	2
	II	4	6

3. Attempt **any one** :

(1×10=10)

1) Solve the assignment problem :

	A	B	C	D
1	4	7	5	6
2	–	8	7	4
3	3	–	5	3
4	6	6	4	2

2) Apply the principle of Duality and solve the following problems :

Minimize $Z = 3X_1 + 2.25X_2$

Subject to

$$2X_1 + 4X_2 \geq 40$$

$$3X_1 + 2X_2 \geq 50$$

$$X_1, X_2 \geq 0.$$



4. Use Dominance principle to solve following game :

10

		Player B		
		1	2	3
Player A	1	7	6	3
	2	- 2	2	- 3
	3	5	9	1

SECTION – II

5. Attempt **any four** :

(4×5=20)

- 1) Customer arriving at a box office window, being manned by a single individual, according to a Poisson input process with a mean rate of 30 per hour. The time required to serve a customer has an exponential distribution with a mean of 90 seconds. Find the average waiting time of a customer. Also, determine the average number of customers in the system and the average queue length.
- 2) Find the sequence that minimizes the total elapsed time to complete the following jobs in the order M1 and M2 on machines and find total elapsed time.

Job No.	1	2	3	4	5	6
Machine M1	3	8	5	3	5	6
Machine M2	5	3	7	4	2	8

- 3) 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) Using Following Table :

Activity	1 – 2	1 – 3	2 – 4	3 – 4	3 – 5	4 – 9	5 – 6
Duration	4	1	1	1	6	5	4

Activity	5 – 7	6 – 8	7 – 8	8 – 9	8 – 10	9 – 10
Duration	8	1	2	1	8	7

- 1) Draw an network diagram
 - 2) Indicate the critical path.
- 5) A machine operator has to perform three operations on a number of different jobs. The time required to perform these operations (in minutes) for each job is known and is given below :

Job	Time for Turning	Time for Threading	Time for knurling
1	3	8	13
2	12	6	14
3	5	4	9
4	2	6	12
5	9	3	8
6	11	1	13

Determine the order in which the jobs should be processed in order to minimize the total time required to turn out all the jobs.

6. Attempt the following :

- 1) The data collected in running a machine, the cost of which is Rs. 60,000. Are given below :

Year	1	2	3	4	5
Resale Value	42000	30000	20400	14400	9650
Running Cost	18000	20270	22880	26700	31800

Determine the optimum period for replacement of the machine.



- 2) A small project is composed of 7 activities whose time estimate are given below :

10

Activity Name	Event	1 – 2	1 – 3	1 – 4	2 – 5	3 – 5	4 – 6	5 – 6
	Event Name	A	B	C	D	E	F	G
Time Required in day	t_o	5	5	11	5	11	11	17
	t_m	5	11	11	5	29	29	29
	t_p	23	17	29	5	47	41	53

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

OR

- 2) A computer contains 10,000 resistors. When any register fails, it is replaced. The cost of replacing a resistor individually is Re. 1 only. If all Resistors are replaced at the same time, the cost per resistor would be reduced to 35 Paise. The percentage of surviving resistors say $S(t)$ at the end of month t and the probability of failure $P(t)$ during the month t are as follows :

T	0	1	2	3	4	5	6
$S(t)$	100	97	90	70	30	15	0
$P(t)$	–	0.03	0.07	0.20	0.40	0.15	0.15

What is the optimal replacement plan ?

10



Seat No.	
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**S.Y.M.C.A (Under Faculty of Engg.) (Part – II) (New) Examination, 2015
DESIGN AND ANALYSIS OF ALGORITHM**

Day and Date : Monday, 21-12-2015
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 quick sort in worst case is _____
a) $O(n^2)$ b) $O(n)$ c) $O(n + 1)$ d) None of these
- 2) The _____ of an algorithm is the amount of computer time it needs to run to completion.
a) Time complexity b) Space complexity
c) Both a) and b) d) None of these
- 3) _____ approach can be used in merge sort.
a) Divide and conquer b) Greedy
c) Both a) and b) d) None of these
- 4) The Tower Hanoi puzzle can be solved by _____ algorithm.
a) Recursive b) Iterative c) Randomized d) None of above
- 5) Reordering of elements as per the pivot element in quick sort is called as
a) Rearranging b) Partitioning c) Sorting d) Swapping
- 6) 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



- 17) LCBB stands for _____
- a) Least Cost Branch and Bound
 - b) Linear cost Branch and Bound
 - c) Low Cost Branch and Bound
 - d) None of these
- 18) _____ is useful in one context because it allows the reformulation of the way addition, subtraction and multiplication.
- a) Algebraic problems
 - b) Modular arithmetic
 - c) Interpolation
 - d) Evaluation
- 19) A row or column is said to be reduced iff it contains at least one zero and all remaining entries are _____
- a) non negative
 - b) minimum cost
 - c) reduced cost
 - d) both a) and b)
- 20) The _____ problem asks for the smallest integer M for which graph G can be colored
- a) chromatic colorability problem
 - b) m-colorability optimization problem
 - c) m-colorability problem
 - d) None of these

SECTION – I

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

- 1) Graham's Scan
- 2) 0/1 knapsack problem
- 3) Strassen's matrix multiplication
- 4) Job sequencing with dead lines
- 5) Reliability design.

3. A) Write computation of w, c, r in optimal binary search tree for the following example :

Let $n = 3$ and $(a_1, a_2, a_3) = (\text{if, do, while})$. Let $P [1 : 3] = \{3, 3, 1\}$ and

$q [0 : 3] = \{2, 3, 1, 2\}$.



B) Explain binary search algorithm with suitable example.

10

OR

B) What is Randomized algorithm ? Write and explain algorithm to find the repeated element from a [1 : n].

SECTION – II

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

20

1) Mixed radix representation

2) N queens problem

3) knapsack problem

4) Recursive algorithms of Inorder, Preorder, Postorder

5) Evaluation and Interpolation.

5. A) Let $n = 4$ $\{W_1, W_2, W_3, W_4\} = \{11, 13, 24, 7\}$ and $m = 31$. Find all possible subsets of w that sum to m , draw a static and dynamic state space tree that will be generated.

10

B) Define graph and explain graph traversal techniques.

10

OR

B) Write an algorithm for algebraic problems.



Seat No.	
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**S.Y. M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
PROGRAMMING IN JAVA (New)**

Day and Date : Tuesday, 22-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

1. Multiple choice questions : **20**
- 1) Navigate methods can be linked dynamically at _____
 - a) run-time
 - b) compile time
 - c) Both a) and b)
 - d) None of these
 - 2) _____ method replaces destructor function in Java.
 - a) virtual
 - b) finalize
 - c) finally
 - d) none of these
 - 3) The following tags are mandatory while creating an HTML document to display an applet.
 - a) name, code, height
 - b) codebase, height, width
 - c) code, height, width
 - d) code, name
 - 4) _____ thread is the default thread which starts executing immediately when we start the program.
 - a) run
 - b) main
 - c) init
 - d) wait
 - 5) Which of the following is used in inter-thread communication ?
 - a) wait(), notify(), notifyall()
 - b) wait(), join()
 - c) notify(), join(), notifyall()
 - d) None of these
 - 6) Which of the following will not generate an error ?
 - a) A catch block without a try block
 - b) Presence of code between try and catch blocks
 - c) A try block with either a catch or a finally block
 - d) A finally block without a try block



- 7) Which of these interfaces define four methods ?
- a) ComponentListener
 - b) ContainerListener
 - c) ActionListener
 - d) InputListener
- 8) Which of these are types of multitasking ?
- a) Process based
 - b) Thread based
 - c) Process and Thread based
 - d) None of the mentioned
- 9) Which of these are integer constants of TextEvent class ?
- a) TEXT_CHANGED
 - b) TEXT_FORMAT_CHANGED
 - c) TEXT_VALUE_CHANGED
 - d) TEXT_SIZE_CHANGED
- 10) MouseEvent is subclass of which of these classes ?
- a) ComponentEvent
 - b) ContainerEvent
 - c) ItemEvent
 - d) InputEvent
- 11) Swing components are_____
- a) Pluggable look and feel
 - b) Light weight
 - c) Platform independent
 - d) All of these
- 12) JFrame is derived from the Frame class and is a _____container.
- a) Light weight
 - b) Heavy weight
 - c) No weight
 - d) None of these
- 13) Swing makes the default combo box into a dropdown list because the default setting is_____
- a) Non-editable
 - b) Editable
 - c) Drop-down list
 - d) None of these
- 14) JDBC is nothing but a Java _____
- a) Classes
 - b) Interfaces
 - c) API
 - d) None of these
- 15) _____ is a connection that a JDBC client makes directly to the DBMS server which may be remote.
- a) Direct
 - b) Indirect
 - c) Both b) and c)
 - d) None of these



- 16) The ResultSet tuple is received and its content can be examined by executing the _____
 - a) SQL query
 - b) Java code
 - c) Both a) and b)
 - d) None of these

- 17) Implementation of remote interface easily _____
 - a) Extends classes
 - b) Can't extends classes
 - c) Can't implement's interface
 - d) None of these

- 18) Java _____ programming provides facility to share data between different computing devices.
 - a) RMI
 - b) JDBC
 - c) Socket
 - d) All of these

- 19) _____ can be used directly to support fast, connectionless, unreliable transport of packets.
 - a) UDP
 - b) TCP
 - c) IP
 - d) All 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) Interfaces
 - b) Types of exception.
 - c) Difference between applet and application
 - d) Thread priorities.
 - e) Example of FileOutputStream.

 - 3. A) What is inter-thread communication with example. **10**
B) What is user defined exceptions ? Write one example to show how to create user defined exceptions. **10**
- OR
- B) Write any five event listener interfaces with their purpose and example. **10**



SECTION – II

4. Write a short note on **(any 4)** : **20**
- a) Java swing label control.
 - b) Socket and ServerSocket.
 - c) Java URL class.
 - d) JDBC-ODBC bridge driver.
 - e) Steps of creating RMI application.
5. A) Describe different steps to connect database to Java applications. Write a program to explain above steps. **10**
- B) Explain the concept of Tabbed Pane in Swing. Explain the use of JTabbedPane with program example. **10**
- OR
- B) Explain the concept of Panel in swing. Explain the use of JPanel with program example. **10**
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Seat No.	
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**S.Y.M.C.A. (Part – II) (New) (Under Faculty of Engg.) Examination, 2015
SOFTWARE TESTING AND QUALITY ASSURANCE (Elective – I)**

Day and Date : Wednesday, 23-12-2015
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. MCQ/Objective Type Questions : 20

- 1) Which of the following is not a level in CMM ?
a) Managed b) Adhoc c) Predictable d) Optimised
- 2) It is a set of levels that defines a testing maturity hierarchy
a) TIM (Testing Improving Model) b) TMM (Testing Maturity Model)
c) TQM (Total Quality Management) d) None of these
- 3) Phase Definition. It will come under
a) CMM Level 1 b) CMM Level 2 c) CMM Level 3 d) None of these
- 4) Which one of the following is not a software process quality ?
a) Productivity b) Portability c) Timeliness d) Visibility
- 5) An important metric is the number of defects found in internal testing compared to the defects found in customer tests, Status of test activities against the plan, Test coverage achieved so far, comes under
a) Process Metric b) Product Metric
c) Test Metric d) None of these
- 6) Which Software Development Life Cycle Model will require to start testing activities when starting development activities itself ?
a) Water fall model b) Spiral Model
c) V-model d) Both a) and c)
- 7) Management and Measurement, it will come under
a) CMM Level 1 b) CMM Level 2 c) CMM Level 3 d) CMM Level 4
- 8) Project management processes are established it will come under
a) CMM Level 2 b) CMM Level 3 c) CMM Level 4 d) CMM Level 5



- 9) The SQA plan identifies
- a) Evaluations to be performed
 - b) Audits to be performed
 - c) Documents to be produced by the SQA group
 - d) All of the above
- 10) MTTF stands for
- a) Measure Time To Failure
 - b) Multiple Time To Failure
 - c) Mean Time to Failure
 - d) None of these
- 11) Glen Myers states “A successful test is one that uncovers an as-yet _____ error”.
- a) discovered
 - b) technical
 - c) undiscovered
 - d) all of these
- 12) According to the testing principles of Davis, all tests should be traceable to _____ requirements.
- a) developer
 - b) customer
 - c) technical
 - d) none of these
- 13) The two types of integration testing are
- a) Top-down and Bottom-up
 - b) Top-up and Bottom-down
 - c) Alpha and beta
 - d) b) and c)
- 14) Find out the one which is not the component of testers work bench ?
- a) input
 - b) procedures to do
 - c) procedures to check
 - d) result
- 15) The unit testing is _____ oriented.
- a) white-box
 - b) black-box
 - c) both a) and b)
 - d) none of these
- 16) _____ testing is conducted at the developer’s sit by end-users.
- a) Beta
 - b) Unit
 - c) Alpha
 - d) Manual
- 17) _____ is a software metric that provides a quantitative measure of the logical complexity of a program.
- a) Data flow analysis
 - b) Control flow analysis
 - c) Cyclomatic complexity
 - d) None of these
- 18) Review meeting should be involved with _____ people.
- a) two and three
 - b) three and five
 - c) four and six
 - d) eight and ten
- 19) In validation testing activities the Low-level testing involves testing _____ one at a time or in combination.
- a) individual program components
 - b) whole products
 - c) complete system
 - d) functional product components
- 20) Static analysis is analysis done on _____ without actually executing it.
- a) input
 - b) source code
 - c) output
 - d) a) and c)



SECTION – I

2. Solve **any four** : **(5×4=20)**
- 1) Clean room strategy.
 - 2) Little wood and Verrall's model.
 - 3) Process classification.
 - 4) Need of SQA.
 - 5) Process and Product Quality.
3. A) Explain defect removal efficiency and cost impact of software defects. **10**
B) What is software reliability ? Explain any four software reliability models. **10**

OR

- B) How SQA group serve as customer's in-house representative ? **10**

SECTION – II

4. Write short notes on (**any 4**) : **20**
- A) System testing
 - B) Beta testing
 - C) Security testing
 - D) Review types
 - E) Computer Aided Software Testing Tools.
5. A) Write a long answer on Seven-steps of Testing process. **10**

OR

- A) Explain Static Testing Vs Dynamic Testing.
B) Write a note on Functional Testing. **10**
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Seat No.	
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**S.Y.M.C.A. (Part – II) (Faculty of Engineering) (New) Examination, 2015
Elective – 1 : UNIX OPERATING SYSTEM**

Day and Date : Wednesday, 23-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

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

1. Choose the correct answer : 20

- 1) _____ is used to controlling processes.
a) wait b) stat c) wc d) none of these
- 2) The shell usually executes a command _____, waiting for the command to terminate before reading the next command line.
a) Synchronously b) Linearly c) Serially d) None of these
- 3) In algorithm getblk, the kernel searches the hash queue that should contain the block but fails to find it there.
a) brelse b) breada c) inode d) getblk
- 4) The _____ algorithms help insure file system integrity, because they maintain a common, single image of disk blocks contained in the cache.
a) buffer b) disc c) filesys d) none of these
- 5) The _____ system call adjusts the value of the file table offset and changes the order in which a process reads or writes a file.
a) read b) write c) map d) seek
- 6) Using algorithm _____ the kernel assigns an inode for the new file.
a) ialloc b) alloc c) ialc d) None of these



- 7) Each pregion entry points to a region table entry and contains the starting virtual address of the region in the process.
a) region b) ptrreg c) pregion d) preg
- 8) In the algorithm _____, the kernel simply turns off the signal indication for signals the process wants to ignore but notes the existence of signals it does not ignore.
a) psig b) exec c) brk d) issig
- 9) A _____ is a contiguous area of the virtual address space of a process that can be treated as a distinct object to be shared or protected.
a) region b) args c) table d) none of these
- 10) In _____, the kernel searches the active region list for the file's text region, identifying it as the one whose inode pointer matches the inode of the executable file.
a) xalloc b) iptr c) iexec d) ialloc
- 11) _____ is a C library routine that calls brk.
a) Sbrk b) Sbk c) AAbk d) Hbrk
- 12) The _____ device is a block device in a configurable section of a disk.
a) map b) swap c) ram d) conf
- 13) A process severs its connection to an open device by _____ it.
a) closing b) releasing
c) opening d) option a) or option b)
- 14) The _____ to driver interface is described by the block device switch table and the character device switch table.
a) kernel b) user c) system call d) none of the above
- 15) _____ is used to controlling processes.
a) wait b) stat c) wc d) none of these
- 16) The value of a _____ semaphore can range only between 0 and 1.
a) counting b) binary c) mutual d) none of these



- 17) _____ are prevented by requiring that critical regions be protected by locks.
 - a) mutual exclusion
 - b) race conditions
 - c) semaphores
 - d) none of these
- 18) A process uses the _____ system call to send a message.
 - a) msgsnd
 - b) mgsnd
 - c) msgsend
 - d) mgsend
- 19) _____ returns various statistics about the process.
 - a) stat
 - b) sta
 - c) stasti
 - d) statst
- 20) Process tracing consists of _____ of the debugger process and the traced process and controlling the execution of the traced process.
 - a) Serialization
 - b) Linearization
 - c) Synchronization
 - d) None of these

SECTION – I

- 2. Write short answer on **(any 4)** : **20**
 - 1) Operating system services
 - 2) Buffer pool structure
 - 3) Write system call
 - 4) The U area
 - 5) Scheduling criteria
 - 3. A) How the kernel change the size of a region ? Explain in detail. **10**
 - B) Write and explain algorithm for conversion of byte offset to block number in file system. **10**
- OR
- B) Explain process state transition diagram in detail. **10**



SECTION – II

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

- 1) Operations for fork
- 2) Mapping a file into region
- 3) Streams
- 4) Clists
- 5) Semaphores.

5. A) Write an algorithm for opening and closing device. **10**

B) Explain allocation of swap space in detail. **10**

OR

B) List functions of clock handler. **10**



Seat No.	
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**S.Y.M.C.A. (Part – II) (Under Faculty of Engg.) (New) Examination, 2015
OBJECT ORIENTED ANALYSIS AND DESIGN (Elective – I)**

Day and Date : Wednesday, 23-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

1. MCQ.

20

- 1) A _____ is a language whose vocabulary and rules focus on the conceptual and physical representation of a system.
 - a) High level language
 - b) Low level language
 - c) Modeling language
 - d) None of these
- 2) A _____ is a physical element that exists at run time and represents a computational resource.
 - a) Artifacts
 - b) Components
 - c) States
 - d) None of these
- 3) The _____ of a system encompasses the classes, interfaces, and collaborations that form the vocabulary of the problem and its solution.
 - a) design view
 - b) implementation view
 - c) interaction view
 - d) deployment view
- 4) A responsibility is a _____ of a class.
 - a) contract
 - b) obligation
 - c) both a and b
 - d) none of above
- 5) An _____ is a structural relationship that specifies that objects of one thing are connected to objects of another.
 - a) Association
 - b) Generalization
 - c) Specialization
 - d) Both b and c
- 6) An _____ is a named property of a class that describes a range of values that instances of the property may hold.
 - a) Attribute
 - b) Object
 - c) Instance
 - d) None of above

P.T.O.



- 7) “Java : : awt” is example of
- a) Simple name
 - b) Qualified name
 - c) Complex name
 - d) None of the above
- 8) A _____ is a general-purpose mechanism for organizing elements into groups.
- a) Package
 - b) Names
 - c) Owned elements
 - d) None of these
- 9) The public parts of a package are called its
- a) Exports
 - b) Imports
 - c) Shared
 - d) Namespace
- 10) Use case diagrams commonly contain
- a) Subject
 - b) Association relationship
 - c) Generalization relationship
 - d) All of above
- 11) A _____ is a behavior that specifies the sequence of state an object goes through during its lifetime in response to events.
- a) State
 - b) State Machine
 - c) Interaction
 - d) Collaboration
- 12) _____ is an object that owns a process or thread and can initiate control activity.
- a) Passive object
 - b) Class
 - c) Active object
 - d) None of the above
- 13) A _____ is physical and replaceable part of the system that confirms to and provides the realization of set of interfaces.
- a) Required interface
 - b) Provided interface
 - c) Process
 - d) Component
- 14) Which of the following is correct ?
- a. Time event is the event that represents the passage of time
 - b. Generally signal is asynchronous event
 - c. Call event is synchronous event
- a) only a
 - b) only b
 - c) only c
 - d) a, b, c



- 15) A _____ is specification of communication between objects that convey information with expectation that activity will ensure.
- a) Message
 - b) State machine
 - c) Collaboration
 - d) Transitions
- 16) An _____ is behavior that comprises a set of messages exchanged among set of objects within a context to accomplish a purpose.
- a) State
 - b) Class
 - c) Object
 - d) Interaction
- 17) Which of the following is true ?
- a. A link is semantic connection between objects
 - b. A link is instance of an association
 - c. Link can not be represented with adornments like name, role name etc.
- a) Only a
 - b) Only b
 - c) a and b
 - d) a, b, c
- 18) We can specify _____ flow of control represented using sick arrowhead.
- a) Procedural
 - b) Nested
 - c) Flat
 - d) Both a and b
- 19) A _____ is condition or situation during the life of an object during which it satisfies some condition, perform some activity, or wait for some event.
- a) State
 - b) State Machine
 - c) Interaction
 - d) Collaboration
- 20) An action is _____ means that it cannot be interrupted by an event and therefore runs to completion.
- a) Non atomic
 - b) Atomic
 - c) Executable
 - d) Computational

SECTION – I

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

(5×4=20)

- 1) Relationship in UML.
- 2) Forward engineering in class diagram.
- 3) Forking and joining.
- 4) Aggregation.
- 5) Abstraction and instances.



- 3. A) Explain building blocks of UML in detail. 10
- B) What is an interface ? Discuss the ways that element realizes an Interface with suitable example. 10
- OR
- B) Explain common mechanisms in detail. 10

SECTION – II

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



Seat No.	
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**S.Y.M.C.A. (Under Faculty of Engg.) (Part – II) Examination, 2015
OPERATING SYSTEM (Old)**

Day and Date : Tuesday, 8-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Total Marks : 100

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

1. MCQ/Objective Type Question Paper : 20

- 1) Every non-leaf node of the unix file system is _____ of files.
a) regular b) device c) directory d) none of these
- 2) A _____ is an instance of a program in execution.
a) program b) process c) exe file d) component
- 3) 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
- 4) _____ programs may invoke system calls directly without a system call library.
a) High level language b) C language
c) Assembly language d) None of these
- 5) The _____ block occupies the beginning of a file system.
a) Boot b) Super c) Inode list d) Data
- 6) 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
- 7) The algorithm for allocation of in-core inode is _____
a) iget b) iput c) bmap d) getblk
- 8) Processes on Unix systems use the _____ descriptor to read input data.
a) Standard input b) Standard output
c) Standard error d) None of these



SECTION – I

2. Write short note on **(any 4)** : **20**
- a) Buffer header.
 - b) Operating system services.
 - c) Algorithm for creating a file.
 - d) Process context.
 - e) Allocating a region.
3. A) Explain process state transition diagram. **10**
- B) Write and explain algorithm for block read ahead. **10**
- OR
- B) Explain mounting file systems in detail. **10**

SECTION – II

4. Write short note on **(any 4)** : **20**
- a) Process scheduling.
 - b) Demand paging.
 - c) Page fault.
 - d) Driver interface.
 - e) Profiling.
5. A) Explain semaphores. Write algorithm for semaphores operation. **10**
- B) What operations kernel does for the fork ? Write and explain algorithm for fork. **10**
- OR
- B) Explain in brief Unix system – V IPC any two mechanisms. **10**
-



- 6) _____ techniques include binning regression and clustering.
- a) Aggregation
 - b) Generalization
 - c) Normalization
 - d) Smoothing
- 7) The _____ algorithm, also called the K-medoids algorithm.
- a) PAM
 - b) Nearest Neighbor
 - c) Squared error
 - d) BIRCH
- 8) _____ technique that adjusts weights in the NN by propagating weight changes backward from the sink to the source nodes.
- a) Propagation
 - b) Back propagation
 - c) Feed forward propagation
 - d) Feed backward propagation
- 9) Outliers can be detected by well-known tests such as
- a) disorder test
 - b) discordancy test
 - c) detection test
 - d) both a and b
- 10) _____ is designed for clustering a large amount of metric data.
- a) BIRCH
 - b) PAM
 - c) NN
 - d) DBSCAN
- 11) Data mining system should be _____ with a database system.
- a) No coupling
 - b) Loose coupling
 - c) Semi tight coupling
 - d) Tight coupling
- 12) _____ is a influential algorithms for mining frequent item sets for Boolean association rule.
- a) Apriori
 - b) Genetic
 - c) Grid based
 - d) Hierarchical
- 13) _____ is the program that traverses the hypertext structure in the web.
- a) Crawler
 - b) Spider
 - c) Robot
 - d) All of these
- 14) _____ database support both transaction time and valid time.
- a) Transaction time
 - b) Snapshot time
 - c) Valid time
 - d) Bitemporal time



- 15) _____ database usually do not accept the same types of updates and queries as traditional snapshot database.
- a) Temporal
 - b) RDBMS
 - c) Time data base
 - d) None of these
- 16) _____ tree was designed to index multi attribute data.
- a) R
 - b) K-D
 - c) Quad
 - d) None of these
- 17) _____ provides the index and query interface in harvest system.
- a) Gatherer
 - b) Broker
 - c) Crawler
 - d) MLDB
- 18) _____ 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
- 19) _____ is the percentage of transactions in which that items (or items) occurs.
- a) Confidence
 - b) Large item set
 - c) Frequent item set
 - d) Support
- 20) Confidence measure the _____ of the rule.
- a) Support
 - b) Percentage
 - c) Strength
 - d) All of these

SECTION – I

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

(4×5=20)

- 1) K-means clustering algorithm.
- 2) Issues in classification.
- 3) Discretization and data reduction.
- 4) Visualization techniques.
- 5) Regression.



3. A) Explain data mining task in detail. **10**
B) Explain Agglomerative algorithm in detail. **10**
OR
C) Explain K-Nearest Neighbor algorithm in detail. **10**

SECTION – II

4. Write a short notes on (**any 4**) : **20**
i) Spatial Rules
ii) Temporal mining
iii) Multimedia mining
iv) Association Rules
v) Crawlers.
5. A) Explain Application of data mining. **10**
B) Explain Web mining in detail. **10**
OR
B) Explain spatial data mining with spatial primitives. **10**
-



Seat No.	
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**S.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
COMPUTER NETWORKS (Old)**

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

Max. Marks : 100

1. Choose correct alternative :

20

- 1) Which of the following device introduces maximum delay into the network ?
a) Repeater b) Router c) Gateway d) Bridge
- 2) The set of major communication links that connects servers across wide geographical arc is called
a) Domain b) Search Engine
c) Back Bone d) Extranet
- 3) Virtual meeting using computers and cameras is called
a) Facsimile b) Tele-networking
c) Video networking d) None of these
- 4) EDI is the abbreviation of
a) E-mail Data Interface b) Electronic Data Interchange
c) Electronic Digital Interface d) None of the above
- 5) The ISO-OSI layer not involved in the data encapsulation process is
a) Presentation b) Network c) Data Link d) Session
- 6) Which layer defined by the IEEE handles error control, flow control and framing ?
a) Network b) MAC c) LLC d) Session
- 7) The system used in the internet for transmitting names of network nodes into address is
a) ARP b) FTP c) NFS d) None



- 8) A 6 MHz channel is used by a digital transmission system utilizing 8 levels signals what is the transmission rate ?
- a) 1.5 M baud/sec b) 6 M baud/sec
c) 12 M baud/sec d) 28 M baud/sec
- 9) A personal computer attached to a LAN is referred to as
- a) Server b) Gateway c) Branch d) None
- 10) Which of the following is not a hardware component of server computer ?
- a) Network Adapter Card b) RAM
c) Novel Netware d) Bus
- 11) Earlier computer networks used a single, powerful computer or processing which of the following models does this ?
- a) Network adapter model b) Distributed computing
c) Client/server d) Centralised computing
- 12) Which of the following network printing component holds a print job in a queue until the printer can process it ?
- a) Redirector b) Spooler c) Print server d) Relocator
- 13) An unconfirmed service has
- a) Request and indication
b) Request, indication, response and confirm
c) Request only
d) Only indication
- 14) Which of the following shown the best performance ?
- a) Pure ALOHA b) Slotted ALOHA
c) 1-persistent CSMA d) P-persistent CSMA
- 15) Four bits are used for packet sequence numbering in sliding window protocol. What is the maximum packet sequence number ?
- a) 4 b) 8 c) 15 d) 16



- 16) By convention, for broad cast, the host in an IP address has all bits _____
a) 0
b) 1
c) Combination 0's and 1's
d) None of the above
- 17) In communication satellite multiple repeaters are known as
a) Stations
b) Detectors
c) Transponders
d) Modulators
- 18) In OSI network architecture, dialog control and token management is done by
a) Network layer
b) Presentation layer
c) Transport layer
d) None
- 19) Communication channel for data transmission used by most people and business organisation are referred to as
a) Public providers
b) Common carriers
c) Common provider
d) Public carriers
- 20) Com, edu, gov are examples of
a) Protocols
b) Domains
c) Tags
d) None of these

SECTION – I

2. Write short note on **(any 4)** : **20**
a) Digital to digital conversion
b) IEEE 802.11
c) Design issues for layers
d) Uses of Network
e) Network Software.
3. Answer the following : **10**
a) Explain token passing mechanism in ring and bus topology. **10**
b) Explain 5 advantages and 5 disadvantages of connection oriented and connection oriented services respectively. **10**
- OR
- b) Explain guided transmission media with its 2 advantages and 2 disadvantages. **10**



SECTION – II

4. Write short note on **(any 4)** : **20**
- a) Client-server Paradigm
 - b) User datagram format
 - c) Framing
 - d) Sliding window protocol
 - e) SNMP, MIB and SMI.
5. Answer the following :
- a) Explain Hierarchical Routing, Link state Routing, Flooding and Broad casting routing algorithms with neat diagram. **10**
 - b) Explain error detection and correction techniques with the help of example. **10**
- OR
- b) Why there is a need of internetworking ? Explain fragmentation and internetwork routing in detail. **10**
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Seat No.	
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**S.Y.M.C.A. (Part – II) (Old) (Under Faculty of Engg.) Examination, 2015
ARTIFICIAL INTELLIGENCE**

Day and Date : Tuesday, 15-12-15

Max. Marks : 100

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

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

1. Multiple choice questions :

20

- 1) _____ is a program that analyzes organic compounds to determine their structure.
- a) Dendral
 - b) Axom
 - c) Both a or b
 - d) Neither a nor b
- 2) The _____ allows for a formal definition of a problem as the need to convert some given situation into some desired situation using a set of permissible operations.
- a) search space
 - b) state space
 - c) problem space
 - d) none of these
- 3) A program that can themselves produce formal descriptions from informal ones. This process called
- a) operation
 - b) operationalization
 - c) optimization
 - d) both a and c
- 4) _____ in which we follow a single, most likely path until come new piece of information comes in that forces us to give up this path and find another.
- a) Breadth-first
 - b) Depth-first
 - c) Either a or b
 - d) Neither a nor b

P.T.O.



- 13) The _____ instance is a binary whose first argument is an object and whose second argument is a class to which the object belongs.
- a) propositional
 - b) predicate
 - c) logical
 - d) static
- 14) _____ is a example of weak-slot filler structure.
- a) Scripts
 - b) Frames
 - c) Conceptual dependency
 - d) All of above
- 15) A _____ grammar is a context free grammar in which choice of nonterminals and production rules is governed by semantic as well as syntactic function.
- a) Case grammar
 - b) Semantic grammar
 - c) Both (a) and (b)
 - d) None of these
- 16) The _____ is obtained by combining all of the literals of the two parent clauses except the ones that cancel.
- a) resolution
 - b) predicate
 - c) resolvent
 - d) proposition
- 17) The _____ planning method attacks problems involving conjoined goals by solving the goals one at a time, in order.
- a) linear
 - b) non-linear
 - c) goal-stack
 - d) conceptual
- 18) 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 Deeping-A*
- 19) A _____ is a collection of attributes and associated values that describe some entity in the world.
- a) Frame
 - b) Script
 - c) Concordance
 - d) Singular
- 20) _____ is a strategy for finding both the structure and the meaning of a sentence in one step.
- a) Conceptual parsing
 - b) Case grammars
 - c) Both (a) and (b)
 - d) None of these



SECTION – I

2. Write short note on (**any 4**) : **20**
- 1) Generate-and-Test algorithm.
 - 2) Depth-first-search algorithm.
 - 3) Issues in the design of search programs.
 - 4) Techniques for reasoning about values.
 - 5) Expert task.
3. A) Write and explain AO* algorithm. **10**
- B) Explain multiple techniques for knowledge representation. **10**
- OR
- B) Write production rules and solution for water jug problem. **10**

SECTION – II

4. Write short note on following (**any 4**) : **20**
- 1) Hierarchical planning.
 - 2) Conceptual dependency.
 - 3) Spell checking.
 - 4) Resolution in propositional logic.
 - 5) The unification algorithms.
5. A) Explain in detail components of a planning system. **10**
- B) Explain in detail rule based system architecture for expert system. **10**
- OR
- B) Explain in detail slots as full-fledged objects. **10**
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Seat No.	
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**S.Y.M.C.A. (Part – II) (Under Faculty of Engg.) Examination, 2015
Elective – I : SOFTWARE TESTING AND QUALITY ASSURANCE (Old)**

Day and Date : Thursday, 17-12-2015
Time : 3.00 p.m. to 6.00 p.m.

Max. Marks : 100

1. Choose correct alternative : **20**

- 1) Software infection is a _____ verification and validation process.
A) Static B) Dynamic C) Static and dynamic D) None
- 2) What are the types of integration testing ?
A) Big Bang Testing B) Bottom Up Testing
C) Top Down Testing D) All of these
- 3) Standards are the established criteria to which the software _____ are compared.
A) Process B) Value C) Quality D) Products
- 4) A non-functional s/w testing done to check if the user interface is easy to use and understand _____
A) Usability testing B) Security testing
C) Black box testing D) Unit testing
- 5) The process that deals with the technical and management issues of software development called as _____
A) Delivery process B) Software process
C) Hardware process D) Testing process
- 6) Testing is a process of executing a program with the intent of finding an _____
A) Bugs B) Defects C) Errors D) Anomalies
- 7) Requirement and Analysis, Design, Development or Coding, testing and Maintenance is called _____
A) SDLC B) Spiral C) RAD D) All of these
- 8) Executing the same test case by giving the no. of inputs on same build called as _____
A) Regression B) AdHoc Testing
C) ReTesting D) Unit testing



- 9) Which is non-functional software testing ?
- A) Unit Testing
 - B) Black Box Testing
 - C) Performance Testing
 - D) Regression Testing
- 10) All of the following might be done during unit testing expect _____
- A) Desk Check
 - B) Manual Support Testing
 - C) Walk through
 - D) None
- 11) Are we building the right product is known as _____
- A) Validation
 - B) Planning
 - C) Verification
 - D) None
- 12) Static analyzers are software tools that scan the source test of a program and detect possible _____
- A) Defects and fault
 - B) Fault and anomalies
 - C) Errors and bugs
 - D) None
- 13) White box testing is not called as _____
- A) Glass Box Testing
 - B) Closed Box Testing
 - C) Open Box Testing
 - D) Clear Box Testing
- 14) Boundary value analysis belongs to which testing method ?
- A) Black Box Testing
 - B) White Box Testing
 - C) Grey Box Testing
 - D) All of these
- 15) The probability of failure-free operation of a computer program in a specified environment for a specified _____
- A) Time
 - B) Value
 - C) Situation
 - D) Both A) and C)
- 16) Acceptance testing is known as _____
- A) Beta Testing
 - B) Grey Box Testing
 - C) Test Automation
 - D) White Box Testing
- 17) Measures the quality of processes used to create a quality product, it is system of management activities called as _____
- A) Validation
 - B) Quality Assurance
 - C) Verification
 - D) None
- 18) Which of the following is not white box testing technique ?
- A) Branch Testing
 - B) Path Testing
 - C) Requirements Testing
 - D) Penetration Testing



- 19) Verification and validation processes are intended to establish the existence of _____ in a software system.
A) Defects B) Errors C) Bugs D) Anomalies
- 20) Retesting modules connected to the program or component after a change has been made ?
A) Full Regression Testing B) Unit Regression
C) Regional Regression D) Retesting

SECTION – I

2. Write short note on **(any 4)** : **20**
- 1) Quality factors
 - 2) Reliability measures
 - 3) Need for SQA
 - 4) Six sigma
 - 5) Automated Static Analysis.
3. A) Explain about verification and validation planning. **10**
B) Explain building blocks of SQA. **10**
- OR
- B) Explain Process and product quality in detail. **10**

SECTION – II

4. Write short note on **(any 4)** : **20**
- 1) Performance Testing
 - 2) Regression Testing
 - 3) CAST
 - 4) Testers Workbench
 - 5) Dynamic Testing.
5. A) Explain levels of Testing in brief. **10**
B) Explain Integration Testing. **10**
- OR
- B) Explain about Black Box Testing. **10**
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Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
MOBILE COMMUNICATIONS (New)**

Day and Date : Monday, 7-12-2015
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. Choose the correct alternative : **20**

- 1) The sky wave work at frequency
a) < 2 MHz b) 2 – 30 MHz c) 30 – 40 MHz d) None of these
- 2) In space division multiplexing the space between interface ranges is called
a) Interference b) Guard space c) Space d) All of these
- 3) _____ layer is responsible in simplified reference model for flow and congestion control.
a) Data link layer b) Network layer
c) Transport layer d) Physical layer
- 4) The _____ located in Geneva is responsible for world wide web coordination of telecommunication activities.
a) ITU b) CEPT c) DECT d) GSM
- 5) In _____ range the transmitted power is large enough to differ from background noise.
a) Transmission range b) Interference range
c) Detection range d) Cell range
- 6) In _____ system the transmitter changes the frequency several times during the transmission of single bit.
a) Slow hopping b) Short term fading
c) Dwell hopping d) Fast hopping



- 7) The _____ works fine for a light load and does not require any complicated process.
 - a) Spread ALOHA
 - b) Classical ALOHA
 - c) Slotted ALOHA
 - d) Simple ALOHA
- 8) Submarine communication or AM radio uses _____ waves.
 - a) Sky
 - b) Ground
 - c) Line of sight
 - d) Micro
- 9) The intensity of radiation is not same in all directions from the antenna is known as
 - a) Omni directional effect
 - b) Directive effect
 - c) Macroni effect
 - d) Negative effect
- 10) Receivers are complex in case of
 - a) CDMA
 - b) FDMA
 - c) TDMA
 - d) SDMA
- 11) The idea of spreading the spectrum using orthogonal codes is in ?
 - a) SDMA
 - b) FDMA
 - c) CDMA
 - d) TDMA
- 12) Current location of MN is defined by
 - a) Care of Address (CoA)
 - b) Foreign Agent (FA)
 - c) Home Network (HN)
 - d) Home Agent (HA)
- 13) The _____ mainly focuses on voice oriented tele services.
 - a) GPRS
 - b) DECT
 - c) FOMA
 - d) GSM
- 14) Which protocol is used for signaling between An MSC and A BSC ?
 - a) PCM
 - b) DTMF
 - c) SS7
 - d) BSSAP
- 15) Cellular system require _____ procedure as single cell do not cover whole service area.
 - a) Load balancing
 - b) Handover
 - c) Call drop
 - d) Mobile originated call
- 16) Data is transmitted in small portions, called
 - a) Explores
 - b) Bursts
 - c) Bounces
 - d) Destroys



- 17) Initially DHCP client sends
- a) DHCPDISCOVER
 - b) DHCPREQUEST
 - c) DHCPCLIENT
 - d) None
- 18) Packet reservation multiple access is
- a) Explicit reservation scheme
 - b) Integrated reservation scheme
 - c) Implicit reservation scheme
 - d) None above
- 19) Roaming is
- a) Moving between AP
 - b) Changing AP
 - c) Scanning for AP
 - d) None of the above
- 20) RSS of GSM system includes
- a) BSC, VLR, HLR
 - b) MS, MSC, BTS
 - c) NSS, OSS, BSC
 - d) MS, BTS, BSC

SECTION – I

2. Write short note on **any four** : **(4×5=20)**
- a) Advance frequency shift keying.
 - b) Simplified reference model for mobile communication.
 - c) Different types of antennas.
 - d) Handover with Inter BSC, Intra MSC scenario.
 - e) Signal propagation effects.
3. A) Give necessity of mobile communication. Explain applications of mobile communications. **10**
- B) Compare the mechanisms of SDMA, TDMA, FDMA and CDMA with their functions. **10**
- OR
- B) Explain multiple access with collision avoidance TDMA schemes with neat diagram. **10**



SECTION – II

4. Write short note on **any four** : **(4×5=20)**
- a) Advantages of WLAN.
 - b) Dynamic source routing in ad hoc networks.
 - c) The three low power states of a Bluetooth device.
 - d) Cellular IP.
 - e) Handover in HiperLAN2.
5. A) Explain in brief PICONET. **10**
- B) How a mobile node is registered via the FA or directly with the HA ? **10**
- OR
- B) What is triangular routing ? How optimized mobile IP solves this problem ? **10**
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Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
DATA WAREHOUSING AND DATA MINING (New)**

Day and Date : Wednesday, 9-12-2015
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. Choose the correct alternative : **20**

- 1) _____ is the process of finding a model that describes and distinguishes data classes or concepts.
A) Data characterization B) Data classification
C) Data discrimination D) Data selection
- 2) The full form of KDD is _____
A) Knowledge Database B) Knowledge Discovery Database
C) Knowledge Data House D) Knowledge Data Definition
- 3) The out put of KDD is _____
A) Data B) Information C) Query D) Useful information
- 4) Data warehouse architecture is based on _____
A) DBMS B) RDBMS C) Sybase D) SQL server
- 5) Data warehouse contains _____ data that is never found in the operational environment.
A) Normalized B) Information C) Summary D) Denormalized
- 6) The data from the operational environment enter _____ of data warehouse.
A) Current detail data B) Older detail data
C) Lightly summarized data D) Highly summarized data



- 7) The _____ exposes the information being captured, stored and managed by operational systems.
- A) Top-down view
 - B) Data warehouse view
 - C) Data source view
 - D) Business query view
- 8) The type of relationship in star schema is _____
- A) Many to many
 - B) One to one
 - C) One to many
 - D) Many to one
- 9) The _____ allows the selection of the relevant information necessary for the data warehouse.
- A) Top-down view
 - B) Data warehouse view
 - C) Data source view
 - D) Business query view
- 10) Which of the following is not a component of a data warehouse ?
- A) Metadata
 - B) Current detail
 - C) Lightly summarized data
 - D) Component key
- 11) Which of the following is not a kind of data warehouse application ?
- A) Information processing
 - B) Analytical processing
 - C) Data mining
 - D) Transaction processing
- 12) Which of the following is not a data mining functionality ?
- A) Characterization and discrimination
 - B) Classification and regression
 - C) Selection and interpretation
 - D) Clustering and analysis
- 13) _____ is a summarization of the general characteristics or features of a target class of data.
- A) Data characterization
 - B) Data classification
 - C) Data discrimination
 - D) Data selection



- 14) _____ is a comparison of the general features of the target class data objects against the general features of objects from one or multiple contrasting classes.
- A) Data characterization B) Data classification
C) Data discrimination D) Data selection
- 15) Strategic value of data mining is _____
- A) Cost-sensitive B) Work-sensitive
C) Time-sensitive D) Technical-sensitive
- 16) The full form of OLAP is
- A) Online Analytical Processing B) Online Advanced Processing
C) Online Advanced Preparation D) Online Analytical Performance
- 17) _____ is a subject-oriented, integrated, time-variant, nonvolatile collection or data in support of management decisions.
- A) Data mining B) Data warehousing
C) Document mining D) Text mining
- 18) The data is stored, retrieved and updated in _____
- A) OLAP B) OLTP
C) SMTP D) FTP
- 19) An _____ system is market-oriented and is used for data analysis by knowledge workers, including managers, executives, and analysts.
- A) OLAP B) OLTP
C) Both of the above D) None of the above
- 20) _____ is a good alternative to the star schema.
- A) Star schema B) Snowflake schema
C) Fact constellation D) Star-snowflake



SECTION – I

2. Write short note on **any four** : **(4×5=20)**
- a) Browser tools
 - b) Parallel processing
 - c) Picklist prompts
 - d) Query tools
 - e) Metadata.
3. A) Explain multiple data types in detail. **10**
- B) Difference between OLAP and OLTP. **10**

OR

- B) Explain Datawarehouse Architecture in brief. **10**

SECTION – II

4. Write short note on **any four** : **(4×5=20)**
- a) Outlier
 - b) Agglomerative
 - c) Web Usage Mining
 - d) KDD
 - e) DBMS Versus DM.
5. A) What are the issues and challenges in data mining. **10**
- B) Explain Nearest Neighbour Method. **10**

OR

- B) Explain Data Mining Application in detail. **10**
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Seat No.	
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**T.Y. M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
INFORMATION SECURITY (New)**

Day and Date : Friday, 11-12-2015
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. Choose correct alternative. **20**

- 1) C.I.A. triangle has been the industry standard for computer security since the development of
 - a) mainframe
 - b) supercomputer
 - c) desktop pc
 - d) all of the above

- 2) _____ are software programs that hide their true nature and reveal their designed behaviour only when activated.
 - a) Viruses
 - b) Worms
 - c) Trojan horses
 - d) All of the above

- 3) A _____ is an identified weakness in a controlled system, where controls are not present or are no longer effective.
 - a) vulnerability
 - b) defect
 - c) both a and b
 - d) none of the above

- 4) A _____ is a program or device that can monitor data traveling over a network.
 - a) social engineering
 - b) sniffers
 - c) phishing
 - d) none of the above

- 5) _____ Act regulates government agencies and holds them accountable if they release private information about individuals or businesses without permission.
 - a) Federal Privacy
 - b) Economic Espionage
 - c) Digital Millennium Copyright
 - d) None of the above



- 6) Once the organizational assets have been identified, a threat assessment process _____ the risks facing each asset.
- a) identifies
 - b) quantifies
 - c) both a and b
 - d) none of the above
- 7) All information that has been approved by management for public release classified as
- a) confidential
 - b) internal
 - c) external
 - d) all of the above
- 8) _____ information of the utmost secrecy to the organization, disclosure of which could severely impact the well-being of the organization.
- a) Public
 - b) Classified
 - c) Sensitive
 - d) None of the above
- 9) Internet protocol is vulnerable to denial of service is
- a) Sabotage
 - b) Software attacks
 - c) Both a and b
 - d) None of the above
- 10) Management must define _____ type of security policy, according to the National Institute of standards.
- a) EISP
 - b) ISSP
 - c) SysSP
 - d) All of the above
- 11) IT Amendment Bill, 2008 which was passed in _____ in December, 2008.
- a) Lok Sabha
 - b) Rajya Sabha
 - c) Both a and b
 - d) None of the above
- 12) Cyber crimes are unlawful acts where the computer is used as a
- a) tool
 - b) target
 - c) both a and b
 - d) none of the above
- 13) _____ provide legal recognition to electronic records.
- a) Digital signature
 - b) Electronic signature
 - c) Both a and b
 - d) None of the above
- 14) The ownership of a digital signature key is bound to a specific user and thus a valid signature shows that the message was sent by that user is
- a) Authentication
 - b) Integrity
 - c) Non Repudiation
 - d) All of the above



- 15) Violation of cyber laws rules of conduct lead to Govt. action as
- a) imprisonment
 - b) fine
 - c) both a or b
 - d) both a and b
- 16) The Certifying Authorities (CAs) issue digital signature certificates for electronic authentication to _____ users.
- a) peoples
 - b) users
 - c) authority
 - d) none of the above
- 17) The _____ may, by notification in the Official Gazette, appoint a CCA.
- a) Central Government
 - b) State Government
 - c) Both a and b
 - d) None of the above
- 18) The Controller shall make use of _____ that are secure from intrusion and misuse.
- a) hardware
 - b) software
 - c) procedures
 - d) all of the above
- 19) The applicant holds the _____, which is capable of creating a digital signature.
- a) private key
 - b) public key
 - c) both a and b
 - d) none of the above
- 20) Every resource on the web has an address called
- a) UML
 - b) URL
 - c) WWW
 - d) None of the above

SECTION – I

2. Write short note on **any four** questions. **(4×5=20)**
- a) Critical characteristics of Information.
 - b) Define and List categories of threats.
 - c) DOS and DDOS.
 - d) Information Asset Valuation.
 - e) Discretionary access controls : Authentication.



3. A) Explain different ethical issues in detail. **10**
B) Describe major stages of risk assessment. **10**
OR
B) Describe in brief application gateways and MAC layer firewalls. **10**

SECTION – II

4. Write short note on **any four** questions. **(4×5=20)**
a) Jurisprudence of Indian Cyber Law.
b) Legal Recognition of Electronic Records.
c) Appointment of controller of certifying authority.
d) Cyber Squatting.
e) Cyber Regulations of Appellate Tribunal.
5. A) Explain in detail power of controller. **10**
B) What is digital signature ? Explain different digital signature features. **10**
OR
B) Explain different powers of adjudication officers. **10**
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Seat No.	
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**T.Y. M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
ADVANCED INTERNET TECHNOLOGY (New)**

Day and Date : Monday, 14-12-2015
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. Choose the correct alternative :

- 1) To join the internet the computer has to be connected to a
 - a) internet architecture board
 - b) internet society
 - c) internet service provider
 - d) none of the mentioned
- 2) Which one of the following protocol is not used in internet ?
 - a) HTTP
 - b) DHCP
 - c) DNS
 - d) None of the mentioned
- 3) What type of commerce occurs when a business sell its products over the internet to other businesses ?
 - a) B2B
 - b) B2C
 - c) C2B
 - d) Enterprise commerce
- 4) Variables always start with a _____ in PHP.
 - a) Pound – sign
 - b) Yen – sign
 - c) Dollar – sign
 - d) Euro – sign
- 5) PHP is an open source software
 - a) True
 - b) False
 - c) Depends on website
 - d) None of these



- 6) Which of the following tags is not a valid way to begin and end a PHP code block ?
- a) `<% %>` b) `<? ?>` c) `<? = ?>` d) `<! !>`
- 7) In PHP Language variables are case sensitive
- a) True b) False
- c) Depends on website d) Depends on server
- 8) Which of the following statements prints in PHP ?
- a) Out b) Write c) Echo d) Display
- 9) Software which allows user to view the webpage is called as
- a) Website b) Interpreter
- c) Internet Browser d) Operating system
- 10) _____ connects web pages.
- a) Connector b) Link c) Hyperlink d) None of the above
- 11) Which of the following is not a type of personal computer ?
- a) mainframe b) desktop c) notebook d) netbook
- 12) Every Web page has a unique address called a(n)
- a) URL b) ARL c) RUL d) LUR
- 13) A Web _____ is a series of Web pages on a specific topic.
- a) site b) home c) group d) URL
- 14) Which of the following is Not an OUTPUT device ?
- a) Mouse b) Printer c) Projector d) Speaker
- 15) Which of the following is the largest community in classification of e-commerce ?
- a) Business to Business (B to B)
- b) Business to Consumer (B to C)
- c) Business to Government (B to G)
- d) Government to Government (G to G)



- 16) Which of the following is not the example of Business to Consumer (B to C) e-commerce ?
a) Amazon.com b) e-bay.com c) dell.com d) lastminute.com
- 17) What is the limit of data to be passed from HTML when doGet() method is used ?
a) 4 K b) 8 K c) 2 K d) 1 K
- 18) The life cycle of a servlet is managed by
a) servlet context b) http or https
c) servlet container d) all of the above
- 19) Which of the below symbols is a newline character ?
a) \r b) \n c) /n d) /r
- 20) Who is the father of PHP ?
a) Rasmus Lerdorf b) William Makepiece
c) Drek Kolkevi d) List Barely

SECTION – I

2. Write short note on **any four** : **(4×5=20)**
a) Uniform Resource Locator
b) History of Internet
c) Cookies
d) HTTP Request
e) HTTP Response
3. A) Explain C2B E-Commerce with its advantages and disadvantages. **10**
B) What is the difference between GET and POST method in Servlet ? **10**
- OR
- B) What are the various applications of E-commerce ? **10**



SECTION – II

4. Write short note on **any four** : **(4×5=20)**
- a) PHP Constant
 - b) Session
 - c) Include Statement
 - d) PHP and UTTP Environment
 - e) Error Handling in JSP.
5. A) Explain Datatypes in PHP with an example. **10**
- B) Explain flow control and loop structure in PHP with example **10**
- OR
- B) Explain directives in JSP with example. **10**
-



Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
ARTIFICIAL TECHNOLOGY (Elective – II) (New)**

Day and Date : Wednesday, 16-12-2015
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. Choose the correct alternative : 20

- 1) What is the term used for describing the judgemental or commonsense part of problem solving ?
 - a) Heuristic
 - b) Critical
 - c) Value Based
 - d) Analytical

- 2) What stage of the manufacturing process has been described as “The mapping of function onto form” ?
 - a) Design
 - b) Distribution
 - c) Project Management
 - d) Field service

- 3) What kind of planning consists of successive representations of different levels of a plan ?
 - a) Hierarchical planning
 - b) Non-hierarchical planning
 - c) Project planning
 - d) All of the above

- 4) Decision support programs are designed to help managers make
 - a) Budget projections
 - b) Visual presentations
 - c) Business decisions
 - d) Vacation schedules

- 5) Programming a robot by physically moving it through the trajectory you want it to follow is called
 - a) Contact sensing control
 - b) Continuous-path control
 - c) Robot vision control
 - d) Pick-and-place control



- 6) High-resolution, bit-mapped displays are useful for displaying
- a) Clearer characters
 - b) Graphics
 - c) More characters
 - d) All of the above
- 7) A bidirectional feedback loop links computer modelling with
- a) Artificial science
 - b) Heuristic processing
 - c) Cognitive science
 - d) Human intelligence
- 8) A process that is repeated, evaluated and refined is called
- a) Iterative
 - b) Descriptive
 - c) Interpretive
 - d) Diagnostic
- 9) An AI technique that allows computers to understand associations and relationships between objects and events is called
- a) Heuristic processing
 - b) Cognitive science
 - c) Relative symbolism
 - d) Pattern matching
- 10) The field that investigates the mechanics of human intelligence is
- a) History
 - b) Cognitive science
 - c) Psychology
 - d) Sociology
- 11) A problem is first connected to its proposed solution during the _____ stage.
- a) Conceptualization
 - b) Identification
 - c) Formalization
 - d) Implementation
- 12) What is the name of the computer program that simulates the thought processes of human beings ?
- a) Human logic
 - b) Expert reason
 - c) Expert system
 - d) Personal information
- 13) A computer program that contains expertise in a particular domain is called an
- a) Intelligent planner
 - b) Automatic processor
 - c) Operational symbolizer
 - d) Expert system
- 14) Ambiguity may be caused by
- a) Syntactic ambiguity
 - b) Multiple word meanings
 - c) Unclear antecedents
 - d) All of the above



- 15) Natural language processing is divided into the two subfields of
- a) Symbolic and numeric
 - b) Understanding and generation
 - c) Algorithmic and heuristic
 - d) Time and motion
- 16) To invoke the LISP system, you must enter
- a) AI
 - b) LISP
 - c) CL (Common Lisp)
 - d) None of the above
- 17) Prior to the invention of time sharing, the prevalent method of computer access was
- a) Batch processing
 - b) Telecommunication
 - c) Remote access
 - d) All of the above
- 18) In a rule-based system, procedural domain knowledge is in the form of
- a) Production rules
 - b) Rule interpreters
 - c) Meta-rules
 - d) Control rules
- 19) A natural language generation program must decide
- a) What to say
 - b) When to say something
 - c) Why it is being used
 - d) Both a) and b)
- 20) Who is considered to be the “Father” of artificial intelligence ?
- a) Fisher Ada
 - b) John McCarthy
 - c) Allen Newell
 - d) Alan Turning

SECTION – I

2. Write short note on **any four** :

(4×5=20)

- a) AI Technique
- b) Production System
- c) Constrain Satisfaction
- d) Frame Problem
- e) Mean End Analysis.



3. A) Explain the approaches to knowledge representation in detail. **10**
B) Explain Issues in Knowledge Representation. **10**

OR

- B) What is hill climbing ? Write and explain simple hill climbing algorithm. **10**

SECTION – II

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

- a) Script
- b) Computable function and predicates
- c) Goal Stack Planning
- d) Game Playing
- e) Alpha Beta Cutoff.

5. A) Explain in detail resolution in predicate logic. **10**
B) Explain in detail secondary search. **10**

OR

- B) Explain in detail truth maintenance system. **10**
-



Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) (New) Examination, 2015
INFORMATION RETRIEVAL SYSTEM (Elective – II)**

Day and Date : Wednesday, 16-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

1. MCQ :

20

- 1) An information retrieval model is a
 - a) Quadruple
 - b) Triple
 - c) Both a) and b)
 - d) None of the above
- 2) Each document is described by a set of representative keywords called
 - a) Index terms
 - b) Primary term
 - c) Secondary term
 - d) None of the above
- 3) Boolean model is a simple model based on
 - a) Set theory
 - b) Boolean algebra
 - c) Both a) and b)
 - d) None of the above
- 4) Queries are specified as
 - a) Boolean expression
 - b) Flowchart
 - c) Both a) and b)
 - d) None of the above
- 5) Boolean model is based on binary
 - a) Decision criterion
 - b) Queries
 - c) Both a) and b)
 - d) None of the above
- 6) Weights are ultimately used to compute the
 - a) Degree of similarity
 - b) Queries
 - c) Set theory
 - d) None of the above
- 7) For _____ weights are assigned to index terms in queries and documents.
 - a) Non binary
 - b) Binary
 - c) Hexadecimal
 - d) None of the above
- 8) A _____ is a high level interactive navigational structure.
 - a) Link
 - b) Hypertext
 - c) Model
 - d) None of the above
- 9) HTML stands for
 - a) Hyper Text Markup Language
 - b) Hyper Text Main Language
 - c) High Text Markup Language
 - d) None of the above



- 10) A _____ is the formulation of a user information need.
- a) Query
 - b) Text
 - c) Program
 - d) None of the above
- 11) _____ has a syntax composed of atoms.
- a) Boolean query
 - b) Text
 - c) Program
 - d) None of the above
- 12) A _____ is a set of syntactic features that must occur in a text segment.
- a) Expression
 - b) Program
 - c) Pattern
 - d) None of the above
- 13) _____ is information on the organization of data.
- a) Meta base
 - b) Data base
 - c) Flow char
 - d) None of the above
- 14) SGML stands for
- a) Standard General Markup Language
 - b) Standard Generalized Markup Language
 - c) Both a) and b)
 - d) None of the above
- 15) Multimedia includes
- a) Audio
 - b) Video
 - c) Images
 - d) All of the above
- 16) GIF stands for
- a) Graphic Interchange Format
 - b) Graphical Interchange Format
 - c) Both a) and b)
 - d) None of the above
- 17) Inverted file structure is composed of
- a) Vocabulary
 - b) Occurrences
 - c) Both a) and b)
 - d) None of the above
- 18) Shift Or is based on
- a) Bit concurrency
 - b) Bit parallelism
 - c) Both a) and b)
 - d) None of the above
- 19) Most search engine use a centralized
- a) Crawler indexer
 - b) Central indexer
 - c) Indexer
 - d) None of the above
- 20) Meta searchers are
- a) Web servers
 - b) Information
 - c) Programs
 - d) None of the above



SECTION – I

2. Write short note on **(any 4)** : **(4×5=20)**
- 1) Natural language
 - 2) A formal characterization of IR Models
 - 3) Structural queries
 - 4) Metadata
 - 5) Classic Information Retrieval.
3. Answer the following :
- 1) Explain keyword based querying in detail. **10**
 - 2) Explain inverted files and indices for text search in detail. **10**
- OR
- 2) What is Multimedia ? Explain formats and textual images in detail. **10**

SECTION – II

4. Write short note on **(any 4)** : **(4×5=20)**
- 1) Data modeling.
 - 2) Conditioning on multimedia data.
 - 3) Document models.
 - 4) Searching using hyper links.
 - 5) One dimensional time series.
5. Answer the following :
- 1) Explain generic multimedia indexing approaches in detail. **10**
 - 2) Explain search engines, browsing, meta searchers in detail. **10**
- OR
- 2) Explain architectural issues of digital libraries in detail. **10**
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Seat No.	
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T.Y. M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
Elective – II FUZZY LOGIC AND ARTIFICIAL NEURAL NETWORK (New)

Day and Date : Wednesday, 16-12-2015
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**.

MCQ/Objective Type Questions

Duration : 30 Minutes

Marks : 20

1. Choose the correct alternative :

(20×1=20)

- 1) In _____ weights are adjusted in probabilistic fashion.
a) Gradient descent learning b) Stochastic learning
c) Competitive learning d) Hebbian learning
- 2) _____ function is also known as quantizer function.
a) signal function b) signum function
c) sigmoidal function d) all the above
- 3) _____ of parameters of membership functions is widely used and practised in fuzzy modelling and applications.
a) probabilistic selection b) priority selection
c) cluster selection d) heuristic selection
- 4) ART is
a) Adaptive Resonance Theory b) Adaptive Resistance Theory
c) Adaptive Right Theory d) None
- 5) A very commonly used activation function is the
a) step function b) interference function
c) heaviside function d) thresholding function
- 6) A fuzzy set A in X is characterized by a membership function
a) F(x) b) A(x) c) $\mu A(x)$ d) All of these
- 7) The hidden layer neurons are linked to the output layer neurons and corresponding weights are referred as
a) hidden output layer weights b) hidden input layer weights
c) layer weights d) weights
- 8) In Hebbian learning the input output pattern pairs are associated by the weightmatrix W known as
a) relation matrix b) identity matrix
c) correlation matrix d) square matrix



- 9) A type of logic that recognizes more than simple true and false values is
a) Fuzzy logic b) Crisp set c) Boolean logic d) None of these
- 10) A crossover point of a fuzzy set A is a point $x \in X$ at which
a) $\mu A(x) = 1$ b) $\mu A(x) = 0$ c) $\mu A(x) = \alpha$ d) $\mu A(x) = e$
- 11) The _____ which is a very minute gap at the end of the dendritic link contains a neuro transmitter fluid.
a) synaptic junction b) neuron
c) spike d) none of these
- 12) A brain contains about _____ units called neurons.
a) 10^9 b) 10^{10} c) 10 d) 10^5
- 13) _____ is the process of formulating a non-linear mapping from a given input space to an output space.
a) Fuzzification b) Inference c) Plant d) All the above
- 14) A fuzzy system is characterized by a set of linguistic statements based on
a) fuzzification b) system knowledge
c) expert knowledge d) defuzzification
- 15) _____ is a mapping from a space of fuzzy control actions defined over an output universe of discourse into a space of non-fuzzy (crisp) control actions.
a) defuzzification b) fuzzification c) calculation d) none
- 16) Trapezoidal membership functions have four parameters and can burden the optimization procedure
a) True b) False
- 17) The output of a _____ is limited to only – 1 and +1 depending on the value of the input signal.
a) linear function b) step function c) ramp function d) none
- 18) In a _____, only forward connectivity of the neurons is considered.
a) Backward network b) Integrated network
c) Feedforward network d) Neural network
- 19) _____ networks consist of receptive field units (hidden units).
a) Multilayer perceptron b) Stochastic
c) Belief d) Radial Basis Function (RBF)
- 20) The _____ is a two-layer feedforward neural network for classification of binary bipolar n-tuple input vectors using minimum hamming distance denoted as DH.
a) Hamming Network (HN) b) Belief Network
c) GRNN d) Probabilistic Neural Networks



SECTION – I

2. Write short note on **any four** : **(4×5=20)**
- a) Fuzzy membership functions.
 - b) Operations on fuzzy sets.
 - c) Defuzzification.
 - d) Parameter identification for fuzzy modelling.
 - e) Control fault diagnosis.
3. A) Explain fuzzy if-then rules. **10**
- B) Give neural network applications process identification. **10**
- OR
- B) Explain development of rule base and decision making system. **10**

SECTION – II

4. Write short note on **any four** : **(4×5=20)**
- a) Human and Computers.
 - b) Characteristics of ANN.
 - c) Learning rules.
 - d) Unsupervised learning.
 - e) BAM training algorithm.
5. A) Explain storage and recall algorithm. **10**
- B) Explain paradigm of associative memory. Explain bidirectional associative memory architecture. **10**
- OR
- B) Explain back propagation algorithm. **10**
-



Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
Elective – II : CLOUD COMPUTING (New)**

Day and Date : Wednesday, 16-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

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

1. Choose the correct alternative.

20

- 1) _____ computing is making our business application mobile and collaborative.
a) Traditional b) Cloud c) Virtualization d) None of these
- 2) The _____ Cloud is mixture of public and private cloud.
a) Private b) Hybrid c) Public d) Community
- 3) The _____ Cloud is operated only within a single organization.
a) Community b) Hybrid c) Public d) Private
- 4) _____ provides access to fundamental resources such as physical machines, virtual machines, virtual storage, etc.
a) SaaS b) PaaS c) DaaS d) IaaS
- 5) _____ is the ability to run multiple operating systems on a single physical system and share the underlying hardware resources.
a) Server b) Multithread c) Virtualization d) Deployment
- 6) _____ provide virtualized IT-infrastructures on demand.
a) Virtual networks b) Virtual machines
c) Virtual memory d) None of these
- 7) The _____ of a data center network provides connectivity for server resource pool residing in the data center.
a) Core layer b) Aggregation layer
c) Access layer d) All of these

P.T.O.



- 8) _____ cloud may be less secure because of its openness.
a) Hybrid b) Private c) Community d) Public
- 9) _____ provider are included in lower administrative overhead and lower total cost of ownership.
a) IaaS b) SaaS c) PaaS d) All of these
- 10) _____ allows the consumer to access computing resources through administrative access to virtual machines.
a) SaaS b) DaaS c) PaaS d) IaaS
- 11) _____ security refers to securing the computer facility, its equipment and software.
a) Logical b) Physical c) Behavioral d) None of these
- 12) Cloud computing security must be done on _____ levels.
a) Four b) Three c) Five d) Two
- 13) _____ service verifies genuineness of communicating entities that they claim to be.
a) Authentication b) Authorization
c) Encryption d) Decryption
- 14) Data _____ protects data from unauthorized disclosure.
a) Integrity b) Confidentiality
c) Authentication d) All of these
- 15) Security _____ is more than a particular algorithm or protocol.
a) Services b) Model
c) Mechanisms d) None of these
- 16) The _____ application management platform also improves overall performance by using different resources or infrastructure.
a) Heterogeneous cloud b) Public cloud
c) Multi-cloud d) Hybrid cloud



- 17) A _____ application management platform is a cloud strategy that manages the use of multiple public, private or hybrid cloud platforms.
 - a) Public cloud b) Heterogeneous cloud
 - c) Hybrid cloud d) Multi-cloud
- 18) _____ is a core issue in many challenges in cloud computing including the need to protect identity information and transaction histories.
 - a) Policy b) Privacy c) Integrity d) All of these
- 19) _____ commonly refers to applications delivered to the end user through a web browser.
 - a) IaaS b) DaaS c) SaaS d) PaaS
- 20) In _____ cloud environments, providers must segregate customer identity and authentication information.
 - a) Public b) Hybrid c) Traditional d) Multi-tenant

SECTION – I

- 2. Write short note on **any four** : (4×5=20)
 - a) What is cloud computing ? What are its benefits ?
 - b) Explain public cloud with its benefits.
 - c) Explain the concept of virtualization along with its benefits.
 - d) Explain the common challenges to private cloud implementations.
 - e) Explain all the public cloud providers.
 - f) Explain Platform as a Service (PaaS) offerings.
- 3. A) Explain all the deployment models of cloud computing. 10
 B) Explain all the private cloud vendors in detail. 10
- OR
- B) Explain all the IaaS vendors in detail. 10



SECTION – II

4. Write short note on **any four** : **(4×5=20)**
- a) Explain the security concerns in traditional IT.
 - b) Explain malicious insiders in cloud computing.
 - c) Explain the concept of multi-cloud management.
 - d) Explain the challenges in managing heterogenous clouds.
 - e) Explain cloud applications in detail.
 - f) Explain cloud security.
5. A) Explain security issues or challenges faced by cloud computing in terms of application security. **10**
- B) Explain benefits and advantages of multi-cloud management systems. **10**
- OR
- B) Explain future technology trends in cloud computing with a focus on cloud service models. **10**
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Seat No.	
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T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) Examination, 2015
Elective – II : LINUX OPERATING SYSTEM (New)

Day and Date : Wednesday, 16-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

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

1. Multiple choice questions :

20

- 1) Linux is _____ kernel that is the Linux kernel executes in a single address space entirely in kernel mode.
 - a) monolithic
 - b) micro
 - c) mini
 - d) all of the above
- 2) The kernel is sometimes referred as the _____ of the operating system.
 - a) supervisor
 - b) core
 - c) both a) and b)
 - d) none of the above
- 3) The kernel stores a list of processes in a linked list called the task list.
 - a) doubly
 - b) circular singly
 - c) circular doubly
 - d) none of the above
- 4) The _____ of the process descriptor describes the current condition of the process.
 - a) process context
 - b) state field
 - c) both a) and b)
 - d) none of the above
- 5) The difference between kernel threads and normal processes is that the kernel threads _____ an address space.
 - a) do not have
 - b) do have
 - c) partially
 - d) none of the above
- 6) Linux and most modern operating systems provides _____ multitasking.
 - a) preemptive
 - b) cooperative
 - c) both a) and b)
 - d) none of the above

P.T.O.



- 7) Each runqueue contains _____ priority arrays.
- a) one
 - b) two
 - c) three
 - d) none of the above
- 8) System calls provide layer between _____ processes.
- a) hardware and user-space
 - b) hardware and OS space
 - c) both a) and b)
 - d) none of the above
- 9) System calls are simple to implement and _____ to use.
- a) easy
 - b) difficult
 - c) moderate
 - d) none of the above
- 10) The function the kernel run in response to a specific interrupt is called
- a) interrupt handle
 - b) interrupt service routine
 - c) both a) and b)
 - d) none of the above
- 11) Code paths that access the manipulate shared data are called
- a) critical region
 - b) process region
 - c) both a) and b)
 - d) none of the above
- 12) An interrupt can occur _____ at almost any time, interrupting the currently executing process.
- a) serially
 - b) synchronously
 - c) asynchronously
 - d) none of the above
- 13) If thread of execution attempts to acquire a lock it already hold, it has to wait for the lock to be released is
- a) deadlock
 - b) self-deadlock
 - c) others deadlock
 - d) none of these
- 14) Atomic operations provide instructions that execute automatically means _____ interruption.
- a) with
 - b) without
 - c) rare
 - d) all of these
- 15) A spin lock is a lock that can be held by _____ thread of execution.
- a) at most one
 - b) only one
 - c) more than one
 - d) none of these



- 16) _____ readers can concurrently hold the reader lock.
- a) only one
 - b) more
 - c) one or more
 - d) none of these
- 17) Semaphores can allow for _____ of simultaneous lock holders.
- a) two
 - b) limited number
 - c) arbitrary number
 - d) none of these
- 18) The system timer goes off at programmed frequency called the
- a) tick rate
 - b) clock rate
 - c) both a) and b)
 - d) none of these
- 19) Linux partitions the systems pages into _____ have a pooling in place to satisfy allocation as needed.
- a) blocks
 - b) zones
 - c) regions
 - d) none of these
- 20) per-CPU data is stored in
- a) an array
 - b) list
 - c) queue
 - d) none of these

SECTION – I

2. Write short note on **(any four)** : **(4×5=20)**
- a) Linux Kernel development community
 - b) The Linux scheduler algorithm
 - c) Preemption and context switching
 - d) System call context
 - e) Writing an interrupt handler.
3. A) Describe different schedule related system calls. **10**
- B) Draw and explain the kernel source tree. What is a beast of a different nature ? **10**
- OR
- B) Write and explain the Linux scheduler algorithm. **10**



SECTION – II

4. Write short note on **(any four)** : **(4×5=20)**
- a) Semaphores
 - b) Hardware clocks and timers
 - c) High memory mappings
 - d) The dentry object and the file object
 - e) Anatomy of block device.
5. A) Explain common file system interface, files system VFS objects and data abstraction. **10**
- B) What do you mean by buffer, buffer heads, the bio structure and request queues ? **10**
- OR
- B) Describe per-CPU allocation and the new per-CPU interface in detail. **10**
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Seat No.	
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**T.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
MOBILE COMMUNICATIONS (Old)**

Day and Date : Monday, 7-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Max. Marks : 100

1. MCQ/Objectives Type Question Paper 20

- 1) _____ offers transmission of messages of up to 160 characters.
a) SMS b) Email c) MMS d) Bluetooth
- 2) Changing VRL's with uninterrupted availability of all services is also called _____.
a) Roaming b) Bluetooth c) Handover d) All of these
- 3) In space division multiplexing the space between interface ranges is called _____.
a) Interface b) Space c) Guard space d) All of these
- 4) Signals are the _____ representation of data.
a) Logical b) Physical c) Technical d) None of these
- 5) _____ radio waves will be deflected at an edge and propagate in different directions.
a) Reflection b) Refraction c) Scattering d) Diffraction
- 6) Spread spectrum techniques involve spreading the bandwidth needed to transmit _____.
a) Signals b) Waves c) Data d) All of these



- 7) In _____ the transmitter uses on frequency for several bit periods.
- a) CDMA
 - b) Fast Hopping
 - c) Cellular System
 - d) Slow Hopping
- 8) The First Tele-teaching started in _____
- a) 1933
 - b) 1982
 - c) 1932
 - d) 1967
- 9) Waves in the _____ frequency range are used by submarines.
- a) Low
 - b) High
 - c) Very low
 - d) Middle level
- 10) _____ marked the beginning of mobile communication satellites with Iridium system.
- a) 1971
 - b) 1998
 - c) 1991
 - d) 1999
- 11) MANET
- a) Mobile Ad-hoc Networking
 - b) Mobile Network
 - c) Mobile Application Networking
 - d) All of these
- 12) _____ technology uses diffuse light reflected at walls.
- a) Bluetooth
 - b) Infra red
 - c) Ad-hoc
 - d) All of these
- 13) WLAN can use _____ to make up network.
- a) Access point
 - b) Ethernet card
 - c) Bluetooth
 - d) None of these
- 14) Infra red and radio transmission are _____
- a) WLAN
 - b) Networks
 - c) Bluetooth
 - d) All of these
- 15) WAP
- a) Wireless Application Protocol
 - b) Wireless Access Protocol
 - c) Wired Application Product
 - d) Wired Access Product



- 16) Standard TCP is used between the fixed computer and the _____
- a) Foreign Agent
 - b) Access Point
 - c) Router
 - d) Mobile Host
- 17) One advice in the piconet can act as _____
- a) Slave
 - b) Master
 - c) Parked
 - d) Standby
- 18) _____ defines the current location of the MN from an IP point of view.
- a) Home Agent
 - b) Foreign Agent
 - c) Care of address
 - d) None of these
- 19) Initially DHCP client sends _____
- a) DHCP Client
 - b) DHCP Request
 - c) DHCP Discover
 - d) All of these
- 20) Infra red devices offer _____ band width.
- a) Higher
 - b) Lower
 - c) Medium
 - d) All of these

SECTION – I

2. Write short note on (**any 4**) : **20**
- a) Antennas
 - b) Signal propagation
 - c) FDM
 - d) Simplified Reference Model
 - e) TETRA.
3. Answer the following (**any 2**) : **20**
- a) Explain UMTS release and standardization
 - b) Explain DECT technology
 - c) Compare between S/F/T/CDMA.



SECTION – II

4. Write short note on (**any 4**) : **20**
- a) DHCP
 - b) Agent Discovery
 - c) Congestion Control
 - d) IP packet delivery
 - e) HIPERLAN.
5. Answer the following (**any 3**) : **20**
- a) Explain WAP architecture.
 - b) Explain basic architecture of hierarchical mobile IPV6.
 - c) Explain mobile ad-hoc networks in detail.
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Seat No.	
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**T.Y.M.C.A. (Part – I) (Faculty of Engg.) Examination, 2015
WEB DESIGN TECHNIQUES (Old)**

Day and Date : Wednesday, 9-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

Instruction : Question 3A and 5A are compulsory.

1. Multiple choice questions.

20

- 1) How can you make a numbered list ?
a) <dl> b) c) <list> d)
- 2) Marquee is a tag in HTML to
a) Mark the list of items to maintain in queue
b) Mark the text so that it is hidden in browser
c) Display text with scrolling effect
d) None of above
- 3) Choose the correct HTML tag for the largest heading.
a) <H1> b) <H6> c) <H10> d) <HEAD>
- 4) _____ property is used to set colour of the border.
a) border-color b) border-style:color
c) color-border d) bgcolor
- 5) The style defines the _____ HTML elements.
a) how to display b) structure
c) how to organize d) none of these
- 6) The _____ tag defines logical divisions (defined) in web page.
a) <frame> b) <division> c) d) <div>
- 7) Java script is a
a) scripting language b) programming language
c) application d) none of these



- 8) _____ returns the character at the specified index.
a) index() b) lastindexof() c) charAt() d) none of these
- 9) Which is the correct method to declare variable in javascript ?
a) variablename b) var variablename
c) both a) and b) d) none of these
- 10) Java script code is written inside file having extension
a) .jsc b) .js c) .javascript d) none
- 11) Which one of these events is standard Global.asa Event ?
a) Seesion_id b) Application_OnStart
c) Application_OnClick d) Sesseion_OnDeactivate
- 12) The most popular way to show XML documents is to use
a) DTD b) XSLT c) HTML d) CSS
- 13) Which statement is true ?
a) All XML elements must be properly closed
b) All XML document must have DTD
c) Both a) and b)
d) All statements are true
- 14) TypeName() function in VBScript is used _____
a) to return numeric representation of data
b) to return subtype of variable
c) to define subtype of variable
d) to convert variable subtype
- 15) VB script is developed by
a) google b) yahoo c) microsoft d) apple
- 16) VB script is
a) server side b) client side c) both a) and b) d) none of these
- 17) _____ is a non-interactive event handler.
a) onClick b) onKeyUp c) onLoad d) onMouseMove
- 18) 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



- 19) _____ function returns the next integer greater than or equal to that number.
a) ceil() b) floor() c) max() d) min()
- 20) The _____ occupies the topmost slot in the DOM.
a) Window b) Navigator c) Form d) Document

SECTION – I

2. Write short answer on (**any 4**) : **(5×4=20)**
- 1) Physical and logical HTML
 - 2) Border properties of CSS
 - 3) tag of HTML with example
 - 4) Colour properties of CSS
 - 5) Array of javascript.
3. A) Write a HTML code to accept students details for MCA admission. **10**
B) What is java script ? Explain math, string and date objects with example. **10**
- OR
- B) Explain external and internal CSS with example. **10**

SECTION – II

4. Write short answer on (**any 4**) : **(5×4=20)**
- 1) Functions of VB script
 - 2) Global.asa file in ASP
 - 3) XML with CSS
 - 4) DOM using XML
 - 5) Data base handling in ASP.
5. A) What is XML ? Explain syntax, elements and attributes of XML. **10**
B) Validation and error handling in VB script with example. **10**
- OR
- B) Applications and session in ASP with an example. **10**
-



Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engineering) Examination, 2015
INTERNET TECHNOLOGY (Old)**

Day and Date : Friday, 11-12-2015

Total Marks : 100

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

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

1. Select the correct alternative. **20**
- 1) _____ is mediator between client and web server in web server architecture.
a) Internet b) Application c) Database d) None of these
 - 2) The web server architecture is _____ tier model.
a) 3 b) 2 c) 1 d) None of these
 - 3) HTTP stands for
a) Hypertension Transfer Protocol b) Hyper Transfer Protocol
c) Hypertext Transfer Protocol d) None of these
 - 4) _____ technique from the payment method consist of Deposit and Clear as one of the type.
a) E-cash b) E-cheque c) Credit card d) Smart card
 - 5) _____ refers to whether the payment can be divided into arbitrary small payments whose sum is equal to original payment.
a) Security b) Anonymity c) Divisibility d) Acceptability
 - 6) The technique in which same cipher is used to encrypt and decrypt message is known as _____ key encryption.
a) Hybrid b) Public c) Private d) None of these
 - 7) Pick odd man out.
a) Cash b) Credit Card c) Cheque d) Authentication



- 8) URL Stands for _____.
- a) Unique Resource Local b) Uniform Resource Local
c) Uniform Resource Locator d) Unique Resource Location
- 9) In C2B e-commerce C and B stands for ____ and ____ respectively.
- a) Coal and Business b) Customer and Busy
c) Customer and Business d) None of these
- 10) SET protocol supports
- a) Confidentiality b) Integrity c) Authentication d) All of these
- 11) How would you start a session in PHP ?
- a) session(start); b) session();
c) session_start(); d) begin_session();
- 12) You need to count the number of parameters given in the URL by a POST operation. The correct way is :
- a) count(\$POST_VARS); b) count(\$POST_VARS_PARAM);
c) count(\$_POST); d) count(\$HTTP_POST_PARAM);
- 13) How would you store order number (34) in an 'OrderCookie' in PHP ?
- a) Cookie('OrderCookie',34); b) makeCookie('OrderCookie',34);
c) setcookie('OrderCookie',34); d) OrderCookie(34);
- 14) Variables/functions in PHP don't work directly with :
- a) echo() b) print() c) isset() d) all of the above
- 15) The sendRedirect() belongs to _____ object in JSP.
- a) response b) exception c) request d) session
- 16) JSP abbreviation stands for
- a) Java Session Page b) Java Server Protocol
c) Java Server Page d) Java Session Protocol



- 17) _____ attribute of include directive is used to include the file in the JSP page.
- a) file b) page c) id d) get page
- 18) The extension for jsp file is _____
- a) .javascript b) .java c) .jsp d) all of these
- 19) Which of the following is used to maintain the value of a variable over different pages ?
- a) static b) global
- c) session_register d) none of the above
- 20) Which of the following attribute is needed for file upload via form ?
- a) enctype = 'file' b) enctype = 'singlepart/data'
- c) enctype = 'multipart/form-data' d) enctype = 'from-data/file'

2. Write notes on (**any four**) : **20**

- a) Digital Signature
- b) Servlet Vs. CGI
- c) Cookies
- d) E-cash
- e) HTTP Request and response

3. a) Assume a suitable structure of student and write a program in servlet to insert a new record in Student table. **10**

b) Define e-commerce. Explain any four advantages and disadvantages of e-commerce **10**

OR

b) What is Servlet ? Explain Servlet Life Cycle in detail. **10**



4. Write notes on (**any four**) : **20**
- a) Request and Response in JSP
 - b) <jsp:plugin> and <jsp:forward> in JSP
 - c) Error handling in JSP
 - d) Scripting Elements in JSP
 - e) Object Oriented PHP.
5. a) Assume a suitable structure of employee having salary as a column and write a program in PHP to increase salary of employee by Rs. 10,000. **10**
- b) Define Array. Explain any nine array functions in PHP with example. **10**
- OR
- b) Define String. Explain any nine string functions in PHP with example. **10**
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Seat No.	
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**T.Y.M.C.A. (Under Faculty of Engg.) (Part – I) Examination, 2015
NETWORK ADMINISTRATION (Old)**

Day and Date : Monday, 14-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

SECTION – I

1. Choose the correct answer : (1×10=10)
- 1) A pure SNMP management system consists of SNMP agents and _____
a) delegates b) workers c) employees d) managers
 - 2) In ASN.1 symbol ::= _____
a) Defined as or assignment b) Alternatives or options
c) Definition of object d) Range
 - 3) There are three types of configuration i.e. static configuration, permanent configuration and _____
a) Dynamic b) Planned
c) Both a) and b) d) None of these
 - 4) Modern telecommunication networks mostly carry _____ data.
a) analog b) signal c) digital d) all of these
 - 5) TMN stands for _____
a) Telecommunication Management Network
b) Telephone Management Network
c) Telecommunication Model Network
d) Telephone Model Network
 - 6) _____ telecommunication operations map is guidebook for business processes in the telecommunication industry.
a) Exchanged b) Embedded
c) Electronics d) Enhanced



- 7) The internet uses connectionless UDP/IP protocol for _____ messages.
- a) receiving
 - b) transporting
 - c) embedding
 - d) none of these
- 8) IRTF stands for _____
- a) Internet Research Task Force
 - b) International Research Task Force
 - c) Internet Re-engineering Task Force
 - d) International Re-engineering Task Force
- 9) The information model is concerned with the structure and _____ of information.
- a) data
 - b) maintain
 - c) storage
 - d) maintenance
- 10) _____ management involves physically securing the network, as well as access to the network by users.
- a) Performance
 - b) Configuration management
 - c) Security
 - d) Accounting

SECTION – II

(1×10=10)

- 11) SNMP access policy is pairing of SNMP community and _____
- a) Data profile
 - b) Protocol profile
 - c) SNMP community profile
 - d) All of these
- 12) SNMP messages are exchanged using _____ protocol.
- a) FTP
 - b) UDP
 - c) TCP
 - d) SMTP
- 13) _____ is not a type of trap generated by SNMP agent process.
- a) Generic trap
 - b) Specific trap
 - c) Time stamp
 - d) Data stamp
- 14) In RMON1 data types is divided into _____ types.
- a) 3
 - b) 4
 - c) 2
 - d) 8



- 15) The enumeration value of valid state in EntryStatus textual convention data type is _____
a) 1 b) 2 c) 3 d) 4
- 16) The 'etheStatsTable' belongs to _____ group.
a) History 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) None of these
- 19) _____ command in unix acquires all host addresses of an ethernet LAN segment.
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) :

(4×5=20)

- a) TCP/IP based networks
- b) Network management model
- c) Managed network
- d) Communication model
- e) Encoding structure.



3. Answer the following : **20**
- a) Explain internet organization and standards SNMP in detail.
 - b) Explain network management-goals, organization and functions in detail.
- OR
- b) Explain ASN.1 in detail.

SECTION – II

4. Write short note on (**any 4**) : **(4×5=20)**
- a) SNMP architectural model
 - b) SNMP functional model
 - c) Remote monitoring (RMON)
 - d) ATM RMON probe location
 - e) SNMP command line tools.
5. a) Explain administrative model in SNMP communication model in detail. **10**
- b) Draw and explain RMON 1 groups and functions in detail. **10**
- OR
- b) Explain network traffic monitoring and routing tools in detail. **10**
-



Seat No.	
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**T.Y.M.C.A. (Part – I) (Under Faculty of Engg.) (Old) Examination, 2015
DISTRIBUTED DATABASES (Elective – II)**

Day and Date : Wednesday, 16-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 100

1. MCQ.

20

- 1) A distributed database is a collection of data which belong _____ to the same system but are spread over the sites of a computer network.
a) Physical b) Logical c) Both d) None of these
- 2) Each global relations can be split into several non overlapping portions which are called as
a) global relation b) fragment c) schema d) none of these
- 3) Applications which can be completely executed at their sites of origin are called as _____ locality.
a) complete b) partial c) processing d) none of these
- 4) A _____ is the set of all tuples for which a minterm predicate holds.
a) fragment b) fragment query
c) global query d) none of these
- 5) $R B (S B T) \leftrightarrow (R B S) B T$, is called
a) factorization b) associativity
c) distributivity d) idempotence
- 6) 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 these

P.T.O.



- 7) _____ operations are critical because they involve the comparison of two operands.
- a) Binary b) Ternary c) Unary d) Inverse
- 8) The site from which the application is issued called as site of
- a) origin b) source c) destination d) none of these
- 9) _____ indicate how the specification part of the RHS should be derived from the specification part of LHS.
- a) Generation rules b) Operator tree
c) Parse tree d) Expression tree
- 10) A high degree of _____ is achieved by storing multiple copies of the same information.
- a) both a and b b) availability
c) redundancy d) reliability
- 11) Two transaction T_i and T_j execute _____ in a schedule S if the last operation of T_i precedes the first operation of T_j in S ; otherwise they execute
- a) read set, write set b) serially, concurrently
c) serializable, conflict d) total, ordering
- 12) 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
- 13) Byzantine agreement nothing but
- a) Recognizing wrong message sent by a failed site
b) Algorithm for connection
c) Protocol
d) Problem of checkpoint and cold start
- 14) A schedule is correct if it is _____. It is computational equivalent to serial schedule.
- a) Serializable b) Sequential
c) Indexed d) None of above



- 15) A distributed database has which of the following advantages over a centralized database ?
- a) Software cost
 - b) Software complexity
 - c) Slow response
 - d) Modular growth
- 16) The _____ controllers method aims at exploiting for reducing communication costs.
- a) Hierarchical
 - b) Global
 - c) Centralized
 - d) Local
- 17) The transaction's durability is called
- a) Concurrency control
 - b) Database recovery
 - c) Isolation
 - d) Serialibility
- 18) 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
- 19) A buffer pool is do
- a) Store old page till the progress
 - b) Store new page
 - c) Store unused pages
 - d) Store not anything
- 20) An extreme case of multiple failure is a _____ failure, where all sites are down.
- a) Partial
 - b) Abort
 - c) Total
 - d) Site

SECTION – I

2. Write short note on **(any 4)** : **(5×4=20)**
- A) Distributed database access primitives.
 - B) Features of distributed Vs centralized databases.
 - C) Top-Down and Bottom-Up approaches to the design of data distribution.
 - D) Mixed fragmentation.
 - E) General queries.



- 3. A) What is fragmentation ? Explain horizontal and derived horizontal fragmentation. **10**
- B) Explain in detail equivalence transformation for queries. **10**
- OR
- B) Explain framework for query optimization. **10**

SECTION – II

- 4. Write short note on **(any 4)** : **20**
 - A) Protection
 - B) Catalog
 - C) Transaction
 - D) Communication failure
 - E) Timestamp.
 - 5. A) What are the different fields of log record ? Explain each in brief. **10**
 - B) Write a short note on serializability. **10**
 - OR
 - B) Explain the framework for transaction management. **10**
-



Seat No.	
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**M.C.A. (Engg.) Direct II Year Students (Bridge Course)
Examination, 2015
DISCRETE MATHEMATICAL STRUCTURE (Paper – I)**

Day and Date : Friday, 18-12-2015

Total Marks : 70

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

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

1. Choose correct alternative : **14**

- 1) A _____ of a set of distinct objects is an ordered arrangement of these objects.
 - a) Combination
 - b) Permutation
 - c) Discrete structure
 - d) None of these

- 2) The number of r-combinations of a set with n elements, where n is a nonnegative integer and r is an integer with $0 \leq r \leq n$, equals, $C(n, r) =$ _____
 - a) $\frac{n!}{r!(n-r)!}$
 - b) $\frac{r!}{n!(n-r)!}$
 - c) n^r
 - d) $n(n-1)(n-2)\dots(n-r+1)$

- 3) How many permutations of {a, b, c, d, e, f, g} end with a ?
 - a) 120
 - b) 5040
 - c) 720
 - d) 600

- 4) The counting of arrangements of objects is known as _____
 - a) Enumeration
 - b) Permutation
 - c) Combination
 - d) None of these

- 5) A one-dimensional array is called a _____
 - a) Matrix
 - b) Vector
 - c) Both a) and b)
 - d) Stack



- 6) Matrix with only row is called _____
- a) Column vector b) Column matrix
c) Row matrix d) None of these
- 7) The matrix-A is called the _____ of the matrix A.
- a) Inverse b) Addition
c) Multiplication d) Negative
- 8) Which of the following is not a statement :
- i) New York is a city
ii) $1/101 = 110$
iii) Marks is cleaver
iv) This statement is true
- a) i) b) ii) c) iii) d) iv)
- 9) A formula which is equivalent to a given formula and which consists of a sum of elementary products is called a _____
- a) Simple normal form
b) Conjunctive normal form
c) Disjunctive normal form
d) Principal normal form
- 10) The logic based upon the analysis of predicates in any statement is called _____
- a) Predicate calculus b) Predicate logic
c) Predicate formula d) None of these
- 11) For two arbitrary sets A and B, $A \times B$ is the _____
- a) Cartesian product b) Sum
c) Power set d) None of these
- 12) In the function given below, the set A is called the _____
- $f : A \rightarrow B$
- a) Codomain b) Function
c) Subset d) Domain



13) A graph T is called a _____ if T is connected and T has no cycles.

- a) Bipartite graph
- b) Complete graph
- c) Tree
- d) Both a) and b)

14) A graph is called a _____ if its edges and/or vertices are assigned data of one kind or another.

- a) Regular graph
- b) Binary tree
- c) Planar graph
- d) Labelled graph

Each question from Q. 2 to Q. 7 carries **14** marks :

Solve **any 3 (three)** questions from Q. 2 to Q. 6 : Q. 7 is **compulsory**.

2. A) Define Permutation. Find the values of each of these quantities : 7

- i) $P(6, 3)$
- ii) $P(6, 5)$
- iii) $P(8, 1)$
- iv) $P(8, 5)$
- v) $P(8, 8)$

B) Find transpose for a given matrix : 7

$$A = \begin{bmatrix} 14 & -15 & 16 \\ -11 & 12 & 13 \\ -12 & 14 & 17 \end{bmatrix}$$

Write a C program to find transpose of a given matrix.

3. A) Find inverse of 7

$$A = \begin{bmatrix} 4 & -5 & 6 \\ -1 & 2 & 3 \\ -2 & 4 & 7 \end{bmatrix}$$

B) Give the definition of conjunctive normal form and obtain CNF for 7

$$\neg(P \vee Q) \leftrightarrow (P \wedge Q)$$

4. A) What are Boolean Matrices and explain the operations on it. 7

B) What is relation ? Explain reflexive type of relation with example. 7



5. A) Explain in detail what is function and invertible function. 7
B) Explain Lattices. Give its properties. 7
6. A) Define and explain set. What are the various types of set ? Explain with example. 7
B) Give definitions for; walk, path and circuit with neat diagram and example. 7
7. A) Give definition for graph, degree of vertex, isolated vertex, pendent vertex with example. 7
B) Sets A and B are the subsets of the Universal Set U, where 7
 $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$
 $A = \{1, 2, 3, 4, 5\}$ and $B = \{2, 3, 4, 5\}$
Find : i) $A \cup B$ ii) $A \cap B$ iii) $A - B$ iv) $\sim A$ v) $\sim B$
-



Seat No.	
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**M.C.A. (Engg.) Direct Second Year Students (Bridge Course)
Examination, 2015
OPERATING SYSTEM (Paper – II)**

Day and Date : Saturday, 19-12-2015
Time : 10.30 a.m. to 1.30 p.m.

Total Marks : 70

- Instructions :** 1) *Q. 1 and Q. 7 are compulsory.*
2) *Attempt any 3 questions from Q. No. 2, 3, 4, 5 and 6.*
3) *Figures to the right indicate full marks.*

1. Multiple Choice Questions :

14

- 1) In operating system, each process has its own
 - a) Address space and global variables
 - b) Open files
 - c) Pending alarms, signals and signal handlers
 - d) All of the mentioned
- 2) A process stack does not contain
 - a) Function parameters
 - b) PID of child process
 - c) Return addresses
 - d) Local variables
- 3) A Process Control Block (PCB) does not contain which of the following
 - a) Bootstrap program
 - b) Process state
 - c) I/O status information
 - d) Program counter
- 4) The objective of multi-programming is to
 - a) To maximize CPU utilization
 - b) Have some process running at all times
 - c) Both a) and b)
 - d) None
- 5) A set of processes are deadlocked if
 - a) All processes are trying to kill each other
 - b) Each process is terminated
 - c) Each process is blocked and will remain so forever
 - d) None



- 6) Which process can affect or be affected by other processes executing in the system ?
- a) Child process
 - b) Cooperating process
 - c) Parent process
 - d) Init process
- 7) Which module gives control of the CPU to the process selected by the short-term scheduler ?
- a) Scheduler
 - b) Interrupt
 - c) Dispatcher
 - d) None
- 8) The most optimal scheduling algorithm is
- a) FCFS – First Come First Served
 - b) RR – Round Robin
 - c) SJF – Shortest Job First
 - d) None of these
- 9) A memory buffer used to accommodate a speed differential is called
- a) Stack pointer
 - b) Disk buffer
 - c) Accumulator
 - d) Cache
- 10) Because of virtual memory, the memory can be shared among
- a) Instructions
 - b) Threads
 - c) Processes
 - d) None
- 11) In FIFO page replacement algorithm, when a page must be replaced
- a) Random page is chosen
 - b) Newest page is chosen
 - c) Oldest page is chosen
 - d) None
- 12) In segmentation, each address is specified by
- a) An offset
 - b) A segment number
 - c) Both a) and b)
 - d) None
- 13) Which of the following is the deadlock avoidance algorithm ?
- a) Elevator algorithm
 - b) Round-Robin algorithm
 - c) Banker's algorithm
 - d) Karn's algorithm
- 14) What is the mounting of file system ?
- a) Deleting a file system
 - b) Attaching portion of the file system into a directory structure
 - c) Crating of a file system
 - d) Removing portion of the file system into a directory structure



- 2. a) Define operating system ? Explain any four operating system components ? **7**
b) Explain real time and time sharing operating system in detail. **7**
 - 3. a) What is process scheduling ? Explain criteria's for process scheduling. **7**
b) Explain Multilevel Feedback Queue Scheduling in detail. **7**
 - 4. a) What is deadlock ? Explain conditions for deadlocks in detail. **7**
b) Write a short note on deadlock prevention. **7**
 - 5. a) Explain the concept of disk formatting and boot block. **7**
b) What is disk scheduling ? Explain FCFS disk scheduling in detail. **7**
 - 6. a) Compare round robin and priority scheduling. **7**
b) Explain short, medium and long term scheduler in detail. **7**
 - 7. a) What is mean by swapping a process ? Explain swapping process in detail with diagram. **7**
b) Explain paging and its implementation. **7**
-