SLR-L – 11

Seat No.	

SYMCA (Part – I) (Under Engg.) Examination, 2017
DATA STRUCTURE

Day and Date : Thursday, 4-5-2017 Total Marks : 100

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

1. Multiple Choice Questions. **20**

1) If the sequence of operations push(1), push(2), pop, push(1),push(2), pop, pop, pop, push(2), pop are performed on a stack, the sequence of popped out values are ?

a) 2, 2, 1, 1, 2 b) 2, 2, 1, 2, 2

c) 2, 1, 2, 2, 1 d) 2, 1, 2, 2, 2

2) The postfix expression for *+ ab – cd is

a) ab + cd –* b) ab cd + – *

c) ab + cd * – d) ab + – cd *

3) Which of the following is/are the levels of implementation of data structure ?

a) Abstract level b) Application level

c) Implementation level d) All of the above

4) Stack is also called as

a) Last in first out b) First in last out

c) Last in last out d) First in first out

5) _____ 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

6) Which of the following data structure can't store the non-homogeneous data elements ?

a) Arrays b) Records c) Pointers d) Stacks

7) Which of the following data structure is non linear type ?

a) Strings b) Lists

c) Stacks d) Graph

P.T.O.

8) 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

9) In the _____ traversal we process all of a vertex's descendants before we move to an adjacent vertex.
   a) Depth First b) Breadth First c) With First d) Depth Limited

10) 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

11) A binary search tree whose left sub tree and right sub tree 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

12) 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

13) A slight modification of indexing in B tree is called
   a) B-tree
   b) B+tree
   c) B+tree which allows redundant storage of key values
   d) All above

14) The average search time of hashing with linear probing will be less if the load factor
   a) is far less than one b) equals one
   c) is far greater than one d) None of above

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) Dynamic structures are ones
   a) Which expand or shrink as required during the program execution
   b) Their associated memory location change
   c) Both a and b
   d) None of the above

17) The most recently arrived data object is the
   a) First one to depart from a stack
   b) Last one to depart from stack
   c) Second one to depart from a stack
   d) Second last to depart from a stack

18) 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

19) 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

20) In adjacency list representation, we store graph as
   a) Cross linked structure
   b) Linked structure
   c) a and b
   d) None

SECTION – I

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

a) Time and space complexity.

b) Circular linked list.

c) Application of stack.

d) Dequeue.

e) Program for insertion sort.

3. A) What is single linked list and explain its operation in detail. **10**

   B) "Insertion sort is better than selection sort". Explain in detail. **10**

   OR

   B) What is queue ? Explain its type. Write operations on queue in detail. **10**

SECTION – II

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

   a) Hashing functions.

   b) Path length.

   c) Heap sort

   d) B-tree

   e) Adjacency list.

5. A) What is graph ? Write algorithm of graph traversing method. **10**

   B) Write a program to search an element from binary tree. **10**

   OR

   B) What is indexing ? Also explain B and B+ indexing. **10**

———————

SLR-L – 12

Seat No.	

SYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
SYSTEM PROGRAMMING

Day and Date : Saturday, 6-5-2017 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

1. MCQ **20**

1) A _____ is the association of an attribute of a program entity with a value.
   a) Binding b) Linker
   c) Loader d) None of the above

2) A software tool is a _____ program.
   a) System b) Application
   c) Linker d) None of the above

3) An assembler is a language translator whose source language is _____ language.
   a) Assembly b) C
   c) Binary d) None of the above

4) The primary function performed by the _____ is the building of the symbol table.
   a) Analysis phase b) Code generation
   c) Code optimization d) None of the above

5) _____ rules which govern the formation of valid statements.
   a) Syntax b) Semantic
   c) Both a and b d) None of the above

6) _____ are used to provide a program generation facility through macro expansion.
   a) Macro b) Function
   c) Software tools d) None of the above

P.T.O.

7) We use the term _____ to represent the rules of meaning of a domain.
   a) Language b) Semantic
   c) Grammar d) None of the above

8) The problem of forward reference is tackled using a process called
   a) Linker b) Back patching
   c) Loader d) None of the above

9) An _____ tree is an abstract syntax tree.
   a) Expression b) Binary
   c) Skewed d) None of the above

10) _____ are used to reduce the main memory requirement of a program.
   a) Program b) Overlay
   c) Function d) None of the above

11) A static binding is a binding performed _____ the execution of a program.
   a) Before b) After
   c) Both a and b d) None of the above

12) _____ is a language processor which bridges an execution gap without generating a machine language program.
   a) Interpreter b) Compiler
   c) Both a and b d) None of the above

13) The default flow of control during macro expansion is
   a) Random b) Sequential
   c) Both a and b d) None of the above

14) The gap between the PL and execution domains is called _____
   a) Execution gap b) Load gap
   c) Link gap d) None of the above

15) A software tool is a _____ program
   a) System b) Application
   c) Linker d) None of the above

16) Address assigned by the _____ is called translation time.
   a) Compiler b) Interpreter
   c) Translator d) None of the above

17) Address assigned by _____ is called load time address.
   a) Loader b) Linker
   c) Compiler d) None of the above

18) _____ instruct the assembler to perform certain action during the assembly of a program.
   a) Assembler directive b) Macros
   c) Commands d) None of the above

19) A _____ is the specification of legal values for variable of the type.
   a) Data type b) Linker
   c) Loader d) None of the above

20) The CPU uses _____ to note address of the next instruction.
   a) Program counter b) Linker
   c) Loader d) None of these

SECTION – I

2. Write short note on (**any 4**). **(4×5=20)**
   1) Macro definition and call.
   2) Pass structure of assembler.
   3) Nested macro call.
   4) Macro.
   5) Assembler directives.

3. Answer the following :
   1) Explain advanced macro facilities and data structures of macro pre-processor in detail. **10**
   2) Explain design of two pass assembler in detail. **10**

   OR

   2) Explain elements of assembly language programming in detail. **10**

SECTION – II

4. Write short note on (**any 4**). **(4×5=20)**
   1) Programming environment.
   2) Absolute loader scheme.
   3) Code generation.
   4) p-code compiler.
   5) Program linking.

5. Answer the following :
   1) What is editor ? Explain types of editors in detail. **10**
   2) Explain user interface in detail. **10**

   OR

   2) Explain storage allocation of compiler in detail. **10**

SLR-L – 13

Seat No.	

SYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
COMPUTER ORGANIZATION AND ARCHITECTURE

Day and Date : Tuesday, 9-5-2017 Total Marks : 100

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

1. MCQ **20**

1) Pipe-lining is a unique feature of _____

a) RISC b) CISC

c) ISA d) IANA

2) The computer architecture aimed at reducing the time of execution of instructions is _____

a) CISC b) RISC

c) ISA d) ANNA

3) The read and write operations usually start at _____ of the sector.

a) Centre b) Middle

c) From the last used point d) Boundaries

4) The access time is composed of _____

a) Seek time b) Rotational delay

c) Latency d) Both a and b

5) The disadvantage/s of the hardwired approach is

a) It is less flexible

b) It cannot be used for complex instructions

c) It is costly

d) Both a and b

6) For the synchronization of the read head, we make use of a _____

a) Framing bit b) Synchronization bit

c) Clock d) Dirty bit

7) The main aim of virtual memory organisation is
   a) To provide effective memory access
   b) To provide better memory transfer
   c) To improve the execution of the program
   d) All of the above

8) The number successful accesses to memory stated as a fraction is called as _____
   a) Hit rate
   b) Miss rate
   c) Success rate
   d) Access rate

9) The algorithm to remove and place new contents into the cache is called _____
   a) Replacement algorithm
   b) Renewal algorithm
   c) Updation
   d) None of the above

10) The effectiveness of the cache memory is based on the property of _____
   a) Locality of reference
   b) Memory localisation
   c) Memory size
   d) None of the above

11) The memory which is used to store the copy of data or instructions stored in larger memories, inside the CPU is called
   a) Level 1 cache
   b) Level 2 cache
   c) Registers
   d) TLB

12) The DMA transfer is initiated by _____
   a) Processor
   b) The process being executed
   c) I/O devices
   d) OS

13) The DMA controller has _____ registers.
   a) 4
   b) 2
   c) 3
   d) 1

14) Interrupts initiated by an instruction is called as
   a) Internal
   b) External
   c) Hardware
   d) Software

15) Which interrupt is unmask able ?
   a) RST 5.5
   b) RST 7.5
   c) TRAP
   d) Both a and b

16) The return address from the interrupt service routine is stored on the
   a) System heap b) Processor register
   c) Processor stack d) Memory

17) The method which offers higher speeds of I/O transfers is
   a) Interrupts b) Memory mapping
   c) Program-controlled I/O d) DMA

18) The most efficient way of handling parameter passing is by using _____
   a) General purpose registers b) Stacks
   c) Memory locations d) None of the above

19) Physical memory is divided into sets of finite size called as _____
   a) Frames b) Pages
   c) Blocks d) Vectors

20) The addressing mode, where you directly specify the operand value is
   a) Immediate b) Direct
   c) Definite d) Relative

SECTION – I

2. Write short note on **any 4** : **(4×5=20)**
   1) RISC and CISC characteristics.
   2) Memory-reference instructions.
   3) Register Stack.
   4) Major components of CPU.
   5) Subroutines.

3. Answer the following :
   A) Explain instruction formats and addressing modes. **10**
   B) What is micro program ? Explain micro programmed control organization in detail. **10**

OR

   B) Explain interrupts and its cycle in detail. **10**

SECTION – II

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

   1) Instruction pipeline.

   2) Virtual memory.

   3) Direct-Memory Access

   4) Handshaking.

   5) Input-Output interface.

5. Answer the following :

   A) Explain Addressing Modes in detail. **10**

   B) What is interrupt ? Explain different types of interrupts. **10**

   OR

   B) Explain Register stack and Memory stack in detail. **10**

———————

SLR-L – 14

Seat No.	

SYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
COMPUTER NETWORKS

Day and Date : Saturday, 13-5-2017 Total Marks : 100

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

1. MCQ **20**

1) The physical layer concerns with
   a) Bit-by-bit delivery b) Process to process delivery
   c) Application to application delivery d) None of the mentioned

2) Which transmission media has the highest transmission speed in a network ?
   a) Coaxial cable b) Twisted pair cable
   c) Optical fiber d) Electrical cable

3) Bits can be send over guided and unguided media as analog signal by
   a) Digital modulation b) Amplitude modulation
   c) Frequency modulation d) Phase modulation

4) In asynchronous serial communication the physical layer provides
   a) Start and stop signalling b) Flow control
   c) Both a and b d) None of the mentioned

5) The physical layer is responsible for
   a) Line coding b) Channel coding
   c) Modulation d) All of the mentioned

6) A single channel is shared by multiple signals by
   a) Analog modulation b) Digital modulation
   c) Multiplexing d) None of the mentioned

7) Wireless transmission can be done via
   a) Radio waves b) Microwaves
   c) Infrared d) All of the mentioned

8) The data link layer takes the packets from _____ and encapsulates them into frames for transmission.

a) Network layer b) Physical layer

c) Transport layer d) Application layer

9) Which one of the following task is not done by data link layer ?

a) Framing b) Error control

c) Flow control d) Channel coding

10) Header of a frame generally contains

a) Synchronization bytes b) Addresses

c) Frame identifier d) All of the mentioned

11) Automatic repeat request error management mechanism is provided by

a) Logical link control sublayer b) Media access control sublayer

c) Network interface control sublayer d) None of the mentioned

12) CRC stands for

a) Cyclic redundancy check b) Code repeat check

c) Code redundancy check d) Cyclic repeat check

13) Which one of the following is a data link protocol ?

a) Ethernet b) Point to point protocol

c) HDLC d) All of the mentioned

14) Which one of the following is the multiple access protocol for channel access control ?

a) CSMA/CD b) CSMA/CA

c) Both a and b d) None of the mentioned

15) The OSI model has _____ layers.

a) 4 b) 5 c) 6 d) 7

16) TCP/IP model does not have _____ layer but OSI model have this layer.

a) Session layer b) Presentation layer

c) Application layer d) Both a and b

17) Which layer is responsible for process to process delivery ?

a) Network layer b) Transport layer

c) Session layer d) Data link layer

18) Which layer provides the services to user ?

a) Application layer b) Session layer

c) Presentation layer d) None of the mentioned

19) Transmission data rate is decided by

a) Network layer b) Physical layer

c) Data link layer d) Transport layer

20) The network layer concerns with

a) Bits b) Frames

c) Packets d) None of the mentioned

SECTION – I

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

1) Ethernet.

2) Wireless Transmission.

3) Cable Television.

4) Physical and Logical Topology.

5) Data Link Layer Switching.

3. Answer the following :

   1) Explain OSI reference model in detail. **10**

   2) Explain guided transmission media in detail. **10**

   OR

   2) What is switching ? Explain types of switching. **10**

SECTION – II

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

   1) Proxy firewall.
   2) The TCP Service Model.
   3) Subneting.
   4) Elements Of Transport Protocols.
   5) DNS.

5. Answer the following :

   1) Explain Routing Algorithms in detail. **10**

   2) Explain UDP and TCP protocols in detail. **10**

   OR

   2) Explain Network Security in detail. **10**

———————

SLR-L – 15

Seat No.	

SYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
COMPUTER GRAPHICS

Day and Date : Tuesday, 16-5-2017 Total Marks : 100

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

1. Multiple Choice Questions. **20**

1) Identify different type of computer graphics.

a) Monochrome and Color b) CRT and Flat panel

c) Vector and Raster d) Monitors and Hardcopy devices

2) _____ is responsible for accessing the frame buffer to refresh the screen.

a) Graphics package b) Video controller

c) CPU d) Monitor

3) In general aliasing is related to _____

a) Scan conversion of line only

b) Generation of characters only

c) Conversion of any analog to digital signal

d) Raster based graphics only

4) _____ function is used to set how text is to be positioned with respect to the start coordinates.

a) SetText Alignment (h, v) b) setTextPrecision(tp)

c) setTextPosition(h, v) d) setText(ts)

5) Which technique of color CRT is used for production of realistic image ?

a) Beam penetration b) Shadow mask

c) Both a and b d) None

6) Scaling a point _____
   a) Doesn't produce any change
   b) Scales the points position vector
   c) Makes the point move w.r.t. origin
   d) Both b and c are true

7) 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

8) The process of mapping a world window in world coordinate system to viewport are called
   a) Transformation viewing
   b) Viewport
   c) Clipping window
   d) Screen coordinate system

9) A method used to test lines for total clipping is equivalent to the _____
   a) Logical XOR
   b) Logical OR
   c) Logical AND
   d) Both a and b

10) The process of extracting a portion of a database or a picture inside or outside a specified region are called _____
   a) Transformation
   b) Projection
   c) Clipping
   d) Mapping

11) _____ mass storage category is for use during processing.
   a) Short-term storage
   b) Archival storage
   c) On-line storage
   d) None of these

12) In image acquisition, the image is captured by a _____
   a) Camera
   b) Scanner
   c) Sensor
   d) None of these

13) To convert the input data to a form suitable for computer processing is the function of _____
   a) Image acquisition
   b) Image description
   c) Image recognition
   d) Image representation

14) Digitization of the spatial coordinates (x, y) is called _____
   a) Image sampling b) Amplitude
   c) Pixel d) None of these

15) What does SEM stands for ?
   a) Scanning Electronic Machine b) Self Electronic Machine
   c) Scanning Electron Microscope d) Scanning Electric Machine

16) _____ is the predominant spectral color in the light.
   a) Saturation b) Brightness
   c) Hue d) None of these

17) In _____ image we notice that the components of histogram are concentrated on the low side on intensity scale.
   a) Bright b) Dark
   c) Colourful d) All of the Mentioned

18) A _____ is an image operation where each pixel value I (u; v) is changed by a function of the intensities of pixels in a neighborhood of (u; v).
   a) Quantization b) Amplitude digitization
   c) Spatial filter d) Sampling

19) _____ can be used to brighten the intensities of an image.
   a) Contrast Transformations b) Logarithmic Transformations
   c) Gamma Transformations d) Stretching Transformations

20) Pick out the odd one out.
   a) LED b) LCD
   c) Gas Discharge Tube d) Plasma Panel

SECTION – I

2. Write short note on (**any 4**) : **20**
   a) Video controller
   b) Seed and edge fill
   c) 2D rotation
   d) Point and line clipping
   e) Raster scan display.

3. A) Explain composite transformation in detail. **10**

   B) Explain Bresnham's line generation algorithm with its implementation. **10**

   OR

   B) Explain Cohan Sutherland line clipping algorithm. **10**

SECTION – II

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

   a) 3D rotation

   b) Intensity resolution

   c) Image negatives

   d) Bit plane searching

   e) Types of projection.

5. A) Explain smoothing spatial filters in detail. **10**

   B) Explain 3D projection in detail. **10**

   OR

   B) How to represent digital image with respect to resolution ? **10**

SLR-L – 16

Seat No.	

S.Y. MCA (Part – II) (Under Faculty of Engg.) Examination, 2017
RELATIONAL DATABASE MANAGEMENT SYSTEM

Day and Date : Friday, 5-5-2017 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

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

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

1) A (n) _____ record is one that contains a repeating group.
   a) Unnormalized b) INF
   c) 2NF d) 3NF

2) A _____ contains records that contain day-to-day business and operational data.
   a) Transaction file b) Work file
   c) Table file d) Master file

3) A _____ refers to a single characteristic or fact about an entity.
   a) Record b) Table
   c) Field d) Primary key

4) You can place subquency in
   a) Where clause b) Having clause
   c) From clause d) All of the above

5) Data that the db needs to manage itself is called.
   a) User data b) System data
   c) Information data d) All of the above

P.T.O.

6) In the 2NF
   a) Attributes may be functionally dependent on nonkey attributes
   b) No attribute dependent on a nonkey attribute
   c) No attributes dependent on a primary key
   d) None of the above is correct

7) Non key field is a field that is _____
   a) Not a candidate key for the primary key
   b) A candidate key for the primary key
   c) A primary key
   d) None of the above is correct

8) Which of these is an example of an entity ?
   a) Student
   b) A patient's name
   c) An employee's ID
   d) All of the above

9) Typically, a database management system is managed by a person called a _____
   a) System manager
   b) Technology manager
   c) Database manager
   d) Database administrator

10) DVD stands for
   a) Digital Video Disk
   b) Digital Vision Disk
   c) Digital Varying Disk
   d) All of these

11) Which language is used to permit or prohibit access to a table ?
   a) DCL
   b) DDL
   c) DML
   d) All of these

12) The relationship between data is defined in the _____
   a) Physical level
   b) View level
   c) Logical level
   d) None of the above

13) The security features of the database are set up by the _____
   a) Online Users
   b) Database Administrator
   c) Naive Users
   d) Application Programmer

14) SQL stands for _____

a) Structured Question Language
b) Structural Query Language
c) Structured Query Language
d) Systematic Query Language

15) A _____ refers to the complete definition of a database, including descriptions of all fields, tables, and relationships.

a) Schema
b) Data repository
c) Data manipulation language
d) None of the above

16) The rule that requires that a foreign key value cannot be entered in one table unless it matches an existing primary key in another table.

a) Referential integrity
b) Domain integrity
c) Entity integrity constraint
d) A data validation constraint

17) A (n) _____ is a person, place, thing, or event for which data is collected and maintained.

a) Primary key
b) Table
c) Record
d) Entity

18) A _____ relationship has an associative entity with its own characteristics.

a) 1 : 1
b) M : N
c) 1 : M
d) All of the above

19) The first entity in the relationship is the _____ entity.

a) Parent
b) Child
c) Mother
d) Brother

20) A table design that contains a repeating group is called _____

a) A repetitive group
b) Unfixed
c) =
d) 1NF

SECTION – I

2. Write short note on **any four**. **(4×5=20)**
   a) Null Value.
   b) Stored Procedures.
   c) Aggregate functions.
   d) Mapping cardinality.
   e) Tuple Relational Calculus.

3. A) Explain DDL, DML and DQL with example. **10**
   B) What is trigger ? Explain trigger with example. **10**

   OR

   B) Explain authorization in SQL with an example. **10**

SECTION – II

4. Write short note on **any four**. **(4×5=20)**
   a) Distributed System.
   b) Data Dictionary.
   c) Serializibility.
   d) Functional Dependencies.
   e) Magnetic Disk.

5. A) Explain B+ tree index file in detail. **10**
   B) What is ACID ? Explain ACID properties in detail. **10**

   OR

   B) Explain Centralized System with example. **10**

SLR-L – 17

Seat No.	

S.Y.MCA (Part – II) (Under Faculty of Engg.) Examination, 2017
OPERATIONS RESEARCH

Day and Date : Monday, 8-5-2017 Total Marks : 100
Time: 3.00 p.m. to 6.00 p.m.

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

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

1) Operations Research uses models to help the management to determine its _____ scientifically.

a) Policies b) Actions
c) Both a and b d) None of the above

2) Operations Research is a _____

a) Science b) Art
c) Mathematics d) Both a and b

3) What have been constructed for Operations Research problems and methods for solving the models that are available in many cases ?

a) Scientific Models b) Algorithms
c) Mathematical Models d) None of the above

4) What aims at optimizing inventory levels ?

a) Inventory control b) Inventory capacity
c) Inventory planning d) None of the above

5) Which theory concerns making sound decisions under conditions of certainty, risk and uncertainty ?

a) Game Theory b) Network Analysis
c) Decision Theory d) None of the above

P.T.O.

6) To find the optimal solution, we apply _____

a) LPP b) VAM
c) MODI Method d) Rim

7) Who defined Operations Research as scientific method of providing executive departments with a quantitative basis for decisions regarding the operations under their control ?

a) Morse and Kimball (1946) b) P.M.S. Blackett (1948)
c) E.L. Arnoff and M.J. Netzorg d) None of the above

8) Who defined Operations Research as scientific approach to problem solving for executive management ?

a) E.L. Arnoff b) P.M.S. Blackett
c) H.M. Wagner d) None of the above

9) Who defined Operations Research as an aid for the executive in marketing his decisions by providing him with the quantitative information based on the scientific method of analysis ?

a) C. Kitte b) H.M. Wagner
c) E.L. Arnoff d) None of the above

10) Operations Research has the characteristics that it is done by a team of _____

a) Scientists b) Mathematicians
c) Academics d) All of the above

11) There is a great scope for _____ working as a team to solve problems of defence by using the Operations Research approach.

a) Economists b) Administrators
c) Statisticians and Technicians d) All of the above

12) Operations Research cannot give perfect _____ to problems.

a) Answers b) Solutions
c) Both a and b d) Decisions

13) Operations Research simply helps in improving the _____ of the solution but does not result in a perfect solution.

a) Quality b) Clarity
c) Look d) None of the above

14) Operations Research involves _____ attack of complex problems to arrive at the optimum solution.

a) Scientific b) Systematic
c) Both a and b d) Statistical

15) A solution may be extracted from a model either by

a) Conducting experiments on it b) Mathematical analysis
c) Both a and b d) Diversified Techniques

16) Operations Research (OR), which is a very powerful tool for _____

a) Research b) Decision – Making
c) Operations d) None of the above

17) Who coined the term Operations Research ?

a) J. F. McCloskey b) F.N. Trefethen
c) P.F. Adams d) Both a and b

18) The term Operations Research was coined in the year _____

a) 1950 b) 1940
c) 1978 d) 1960

19) This innovative science of Operations Research was discovered during _____

a) Civil War b) World War I
c) World War II d) Industrial Revolution

20) Operations Research was known as an ability to win a war without really going into a _____

a) Battle field b) Fighting
c) War d) Both a and b

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

1) A road transport company has one reservation clerk on duty at a time. She handles information of bus schedules and marks reservation customer arrive at a rate of 8 per hour and clerk can serve 12 customers on an average per hour. After stating your assumption, answer the following.

i) What is the average number of customer waiting for service for the clerk ?

ii) What is the average time a customer has to wait before getting service ?

2) Solve the following assignment problem :

	I	II	III	IV	V
A	11	17	8	16	20
B	9	7	12	6	15
C	13	16	15	12	16
D	21	24	17	28	26
E	14	10	12	11	15

3) Solve the L.P.P by Simplex method

Max. $Z = 5x_1 + 5x_2$ subject to

$3x_1 + 5x_2 \leq 15$;

$5x_1 + 2x_2 \leq 10$;

$x_1, x_2 \geq 0$

4) Solve the following game :

	B	
A	5	1
	3	4

5) People arrive at a theater both in a poisson distributed arrival rate of 25 per hr. service time is constant at 2 minutes. Calculate :

i) The mean number in the waiting time

ii) The mean waiting time.

SECTION – I

3. Attempt **any one** : **10**

1) Solve the integer programming problem using Gomory's cutting plane method.

Maximize $Z = x_1 + 4x_2$ Subject to

$2x_1 + 4x_2 \leq 7$

$5x_1 + 3x_2 \leq 15$

$x_1, x_2 \geq 0$ and integer.

2) Solve transportation problem :

		A	B	C	D	Available
From	I	5	5	4	7	5
	II	6	5	1	2	5
	III	5	9	1	4	6
	IV	8	3	2	4	4
	V	6	5	3	1	6
Required		5	8	3	10	

4. Obtain the optimal solution for the following transportation problem. **10**

	D_1	D_2	D_3	Supply
S_1	3	8	5	5
S_2	4	4	2	8
S_3	6	5	8	7
S_4	2	7	3	14
Demand	7	9	18	

SECTION – II

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

a) Describe the steps for processing n jobs through two machines.

b) A shop is about to order heaters for a forecast spell of cold weather. The shop pays Rs. 1,000 for each heater and during the cold spell, they sell for Rs. 2,000 each. The demand for the heater declines after the cold spell is over and any unsold units are sold at Rs. 500. Previous experience suggests the likely demand for heaters is follows :

Demand	10	20	30	40	50
Probability	0.20	0.30	0.30	0.10	0.10

How many heaters should the shop buy ?

c) A project has the following time scheduling activity.

Activity	1 –2	1 – 3	1 – 4	2 – 5	3 – 6	3 –7	4 – 6	5 – 8	6 – 9	7 – 8	8 – 9
Duration	2	2	1	4	8	5	3	1	5	4	3

Construct PERT network and compute critical path and its duration.

d) Find the EOQ for the following data :
Annual usage = 1000 pieces
Cost per pieces = Rs. 200
Ordering cost = Rs. 6/order
Expediting cost = Rs. 4/order
Inventory holding cost = 20% of avg. inventory
Material holding cost = Rs. 1 per piece.

e) A contractor has to supply 10,000 bearings/day to an automobile manufacturer. He finds that, when he starts a production run, he can produce 25,000 bearing per day. The cost of holding a bearing in stock for one year is 20 paise and set-up cost of a production run is Rs. 180.00. How frequently should production run be made ?

6. Attempt the following :

a) Consider the following data . **10**

Unit cost = Rs. 100, Order cost = Rs. 160, Inventory carry cost = Rs. 20. Back-order cost or stock-out cost = Rs. 10. Annual Demand = 1000 Unit.

Compute the following :

i) Mini cost Order quantity

ii) Time between orders

iii) Maximum inventory level.

b) Consider a project consisting of the following jobs : **10**

Job	Predecessor	Days
A	–	15
B	–	10
C	A, B	10
D	A, B	10
E	B	5
F	D, E	5
G	C, F	20
H	D, E	10
I	G, H	15

OR

b) Describe steps to process n-jobs through two machines. **10**

SLR-L – 18

Seat No.	

SYMCA (Under Faculty of Engg.) (Part – II) Examination, 2017
DESIGN AND ANALYSIS OF ALGORITHM

Day and Date : Friday, 12-05-2017 Total Marks : 100

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

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

1. Multiple Choice Questions : **20**

1) Algorithm that are definite and effective are also called as
   a) Profiling b) Predicate calculus
   c) Assertions d) None of these

2) Time complexity of binary search in worst case is _____
   a) $O(n^2)$ b) O(log n)
   c) O(n + 1) d) None of these

3) Feasible solution that either maximizes or minimizes a given objective function is called _____
   a) Optimal solution b) Feasible solution
   c) Both (a) and (b) d) None of these

4) Knapsack problem can be solved by _____
   a) Greedy method b) Divide and conquer
   c) Both a and b d) None of these

5) An algorithm that calls itself is _____
   a) Indirect recursive b) Direct recursive
   c) Recursive d) None of these

6) A _____ is the schedule which the processing of task can be terminated depending upon the priority of the task.
   a) Preemptive
   b) Non preemptive
   c) Both a and b
   d) None of these

7) Given 2 sorted lists of 'm' and 'n' respectively. Number of comparisons needed in the worst case by the merge sort algorithm will be
   a) mn
   b) max (m,n)
   c) min (m,n)
   d) m + n – 1

8) Traveling Salesman Problem (TSP) is to find a tour of _____
   a) Minimum cost
   b) Maximum cost
   c) Optimal cost
   d) Feasible cost

9) The _____ step count is the maximum number of steps that can be executed for the given parameters.
   a) Best case
   b) Worst case
   c) Average case
   d) All of above

10) _____ refers to the task of determining how much computing time and storage is required for an algorithms.
   a) Analysis of algorithm
   b) Performance analysis
   c) Specification of algorithm
   d) Both a and b

11) _____ representation explicitly stores all coefficients whether or not they are zero.
   a) Sparse
   b) Dense
   c) Number
   d) Graph

12) Let (a1,_ _ _ , ar) + (b1, _ _ _ , br) = ((a1 + b1) mod P1 _ _ _ (ar + br) mod Pr) called _____
   a) Mixed radix representation
   b) Single radix representation
   c) Decimal radix representation
   d) None of these

13) The system that allows for the manipulation of mathematical expression is called _____

a) Algebraic transformation
b) Fast Fourier transformation
c) Evaluation and Interpolation
d) None of these

14) The Fourier transform is used by _____ Engineers.

a) Computer
b) Mechanical
c) Electrical
d) Civil

15) Sum of subset problem is solved by _____

a) Backtracking
b) Branch and Bound
c) Greedy method
d) None of these

16) GCD (22, 8) is

a) 1
b) 2
c) 3
d) 4

17) _____ constraints are rules that restrict each xi to take on values from a given set.

a) Implicit
b) Explicit
c) Back track
d) Programming

18) A vertex 'V' in a connected graph G is an _____ point iff the deletion of vertex V together with all edges incident to 'V' disconnects the graph into two or more non-empty components.

a) Intersection
b) Union
c) Bisection
d) Articulation

19) A _____ tree of graph G is the tree which contains all the vertices of G.

a) Spanning
b) Binary
c) Both a and b
d) None of these

20) Branch and bound technique is used to solve _____

a) Interpolation
b) Knapsack problem
c) 0/1 Knapsack problem
d) All

SECTION – I

2. Write short note on following (**any 4**) : **20**
   1) Performance Analysis.
   2) Convex Hull.
   3) Algorithm for all pair shortest path.
   4) General greedy method.
   5) Pseudo code Conventions.

3. A) Consider the following instance of the Knapsack problem.
   n = 3, m = 19, (P1, P2, P3, P4) = (2, 5, 8, 1), (W1, W2, W3, W4) = (10, 15, 6, 9)
   Find out the optimal solution by using greedy Knapsack method and write an algorithm for it. **10**

   B) Write an algorithm for quick sort and explain its time complexity. **10**

   OR

   B) Explain string edition problem and its solution using dynamic programming.
   Let X = a, a, b and Y = b, a, b. Find minimum cost edit sequence that transform X into Y.

SECTION – II

4. Write short note on following (**Any 4)** : **20**
   1) Breadth First Search.
   2) Lagrange's interpolation.
   3) Bi connected Components.
   4) Modular Arithmetic.
   5) Graph coloring.

5. A) Write an algorithm for 8 queen's problem using backtracking. **10**

   B) Write and trace algorithm for move up and move down tree. **10**

   OR

   B) Find out the minimum cost tour of traveling salesman problem from the following matrix by using branch and bound technology.

$$\begin{bmatrix} \infty & 20 & 30 & 10 \\ 15 & \infty & 16 & 4 \\ 3 & 5 & \infty & 2 \\ 19 & 6 & 18 & \infty \end{bmatrix}$$

SLR-L – 19

Seat No.	

SYMCA (Part – II) (Under Faculty of Engg.) Examination, 2017
PROGRAMMING IN JAVA

Day and Date : Monday, 15-5-2017 Total Marks : 100
Time : 3.00 p.m. to 6.00 p.m.

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

1. Multiple Choice Questions. **20**

1) Byte code is a platform _____ code because it can be run on multiple platforms.

a) Dependent b) Independent
c) Executable d) None of the above

2) _____ used for creating distributed applications.

a) RMI b) EJB
c) Both a and b d) None of the above

3) A variable that is created inside the class but outside the method is known as _____ variable.

a) Instance b) Private
c) Public d) None of the above

4) The _____ keyword belongs to the class than instance of the class.

a) Static b) Final
c) This d) None of the above

5) A applet can be executed by browsers that run under platform _____

a) Linux b) Windows
c) Mac OS d) All of the above

P.T.O.

6) Thread is _____ sub-process or a smallest unit of processing.
   a) No weight b) Light weight
   c) Heavy weight d) All of the above

7) An entity that has state and behavior is known as an _____
   a) Class b) Object
   c) Interface d) None of the above

8) Before the invocation of start method, the thread is in _____ state.
   a) New b) Ready to run
   c) Runnable d) None of the above

9) Sleep () method is used to sleep a thread for the specified _____
   a) Milliseconds b) Seconds
   c) Minutes d) None of the above

10) _____ is the container that contain title bar and can have menu bars.
   a) Frame b) Window
   c) Panel d) None of the above

11) Java Swing is a part of JFC provides _____ components.
   a) Platform-independent b) Lightweight
   c) Both a and b d) None of the above

12) JDBC is nothing but a java _____
   a) Classes b) Interfaces
   c) API d) None of these

13) 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

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

15) The function of java API is to document _____ for dealing with data which may be relational data.

a) Standard frame work b) Class library

c) DLL d) None of these

16) _____ represents standard way to identify a resource.

a) URL b) URI

c) Both a and b d) None of these

17) RMI stand for _____

a) Remote Method Invocation b) Real Method Invocation

c) Rare Method Invocation d) None of these

18) _____ does the JDBC.

a) Connection with database b) Execute the SQL statements

c) Process the ResultSet d) All of these

19) RMI server is _____

a) Multithreaded b) Not multithreaded

c) Synchronized multithreaded d) All of these

20) _____ provides a reasonable intelligible form to uniquely identify information on the internet.

a) HTTP b) URL

c) www d) None of these

SECTION – I

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

a) Features of Java

b) Multiple inheritance

c) Lifecycle of an applet

d) Thread synchronization

e) ListBox and ComboBox

3. A) Describe an applet life cycle. Write a program to explain use of an applet. **10**

   B) When are two threads said to be deadlocked ? Write a simple application program to illustrate the deadlock situation. **10**

   OR

   B) Differentiate between InputStream-OutputStream and Reader-Writer classes. **10**

SECTION – II

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

   a) Swing JMenu control

   b) Socket and ServerSocket

   c) JDBC-ODBC bridge driver

   d) DatagramSocket and DatagramPacket.

   e) Native-API driver.

5. A) Explain in detail different JDBC drivers. **10**

   B) What is Scroll Pane in swing ? Explain the use of JScrollPane with program example. **10**

   OR

   B) Explain steps of creating RMI application. Write RMI application to do addition to two numbers. **10**

SLR-L – 20

Seat No.	

SYMCA (Part – II) (Under Faculty of Engg.) Examination, 2017
SOFTWARE TESTING AND QUALITY ASSURANCE
(Elective – I)

Day and Date : Wednesday, 17-5-2017 Total Marks : 100

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

1. MCQ. **20**

1) Verification is

a) Process based b) Product based

c) Both a and b d) None of these

2) Which one of the following is not a software process quality ?

a) Productivity b) Portability

c) Timeliness d) Visibility

3) 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

4) Purpose of process is to deliver software

a) In time b) With acceptable quality

c) That is cost efficient d) Both a and b

5) Optimization, Defect Prevention and Quality Control. It comes under the

a) CMM Level 2 b) CMM Level 3

c) CMM Level 4 d) CMM Level 5

6) For black-box testing
   a) The tester is completely unconcerned about the internal behaviour of the program
   b) The tester is concerned with finding circumstances in which the program does not behave according to specifications
   c) Test data is derived solely from specifications
   d) All of the above

7) All of the following might be done during unit testing except
   a) Desk check
   b) Manual support testing
   c) Walkthrough
   d) Compiler based testing

8) Splitting project into tasks and estimate time and resources required to complete each task called as
   a) Project scheduling
   b) Project deadline
   c) Both a and b
   d) None of these

9) The name of the testing which is done to make sure the existing features are not affected by new changes.
   a) Regression testing
   b) White box testing
   c) Unit testing
   d) None of these

10) Which Software Development Life Cycle Model will require to start Testing Activities when starting development activities itself
   a) Water fall model
   b) V-model
   c) Spiral Model
   d) None of the above

11) Beta testing will be done at
   a) User place
   b) Developers place
   c) Both a and b
   d) None of the above

12) RAD stands for
   a) Rapid Application Data
   b) Rapid Action Development
   c) Rapid Application Development
   d) None of the above

13) Which of the following acceptance testing is done prior to a new build ?

a) Alpha testing
b) Beta testing
c) Smoke testing
d) None of the above

14) Which type of test include, how well the user will be able to understand and interact with the system ?

a) Usability Testing
b) User Acceptance Testing
c) Alpha Testing
d) None of these

15) This Testing Technique examines the basic program structure and it derives the test data from the program logic; Ensuring that all statements and conditions executed at least once. It is called as

a) Black Box Testing
b) White Box Testing
c) Grey Box Testing
d) None of the above

16) Defects generally fall into the following categories

a) WRONG
b) MISSING
c) EXTRA
d) All of the above

17) Executing the same test case on a modified build called as

a) Regression Testing
b) Retesting
c) Ad hoc Testing
d) None of these

18) Boundary value analysis belongs to which testing method ?

a) Black Box Testing
b) White Box Testing
c) Both a and b
d) None of these

19) Software testing which is done without planning and Documentation is known as

a) ad hoc Testing
b) Regression testing
c) Unit Testing
d) None of the above

20) Acceptance testing is known as

a) Beta Testing
b) White box testing
c) Black box testing
d) None of these

SECTION – I

2. Solve **any four** : **(4×5=20)**
   1) SQA Activities.
   2) Verification and validation planning.
   3) Six-sigma.
   4) Process Improvement.
   5) ISO 9000.

3. A) Explain software quality metrics in detail. **10**

   B) Explain the SEI process capability maturity model in detail. **10**

   OR

   B) What is SQA ? Explain Building blocks of SQA in detail. **10**

SECTION – II

4. Solve **any four** : **(4×5=20)**
   1) Testing Objectives.
   2) Unit Testing.
   3) Structural Testing.
   4) Data Flow Analysis.
   5) Installation Testing.

5. A) What is test case ? Explain test case format. **10**

   B) What is White Box Testing ? Explain statements Coverage, Branch and decision coverage in detail. **10**

   OR

   B) What is testing ? Explain Static Testing Vs Dynamic Testing. **10**

———————

SLR-L – 21

Seat No.	

SYMCA (Part – II) (Under Faculty of Engg.) Examination, 2017
UNIX OPERATING SYSTEM (Elective – I)

Day and Date : Wednesday, 17-5-2017 Total Marks : 100
Time: 3.00 p.m. to 6.00 p.m.

1. MCQ : **20**

1) The _____ at the centre of the unix operating system provides basic services.

a) Hardware b) Software
c) Both a and b d) None of the above

2) _____ is an instance of program in execution.

a) File b) Process
c) Program d) None of the above

3) If the Kernel writes the pages of the memory to a swap device is called _____ system.

a) Swapping b) Paging
c) Both a and b d) None of the above

4) The file table keeps track of the byte of offsets in the file where the users next _____ will start.

a) Read b) Write
c) a and b d) None of the above

5) In unix file subsystem access file data using _____ mechanism.

a) Buffering b) Blocking
c) Byte by byte d) None of the above

6) _____ module allocates CPU to process.

a) Scheduler b) Kernel
c) Operating system d) None of above

7) The device no. is the _____ file system no.

a) Logical b) Physical
c) Significant d) None of the above

8) Inode exists in _____ form on a disk.

a) Static b) Dynamic
c) Both a and b d) None of these

9) To read a disk block a process uses algorithm _____ to search for it in the buffer cache.

a) getblk b) iget
c) bread d) None of these

10) Execute permission on a directory allows a process to _____ the directory for a file name.

a) Read b) Write c) Search d) None of the above

11) The process is executing in _____ mode.

a) User b) Kernel
c) Both a and b d) None of these

12) The state _____ is really same as the state ready to run in memory.

a) Pre empted b) Zombie
c) Sleeping d) None of these

13) A process can access its U area when it executes in _____ mode.

a) Kernel b) User
c) Both a and b d) None of these

14) The location of the region is _____ memory.

a) Physical
b) Cache
c) Secondary
d) None of these

15) _____ system call changes the process sate form asleep to ready to run in memory.

a) Sleep
b) Wakeup
c) Both a and b
d) None of the above

16) A swap device is _____ in a configurable section of disk.

a) Block
b) Byte
c) Bit
d) None of the above

17) The _____ is a Kernel process that swaps out memory pages that are no longer part of the working set of a process.

a) Swapper
b) Page stealer
c) Both a and b
d) None of the above

18) Which of the following feature of the unix may be used for inter process communication ?

a) Signals
b) Pipes
c) Semaphore
d) All of these

19) A clist is a _____ linked list of cblocks with account of the no. of character on the list.

a) Variable length
b) Fixed length
c) Predefined length
d) None of these

20) The fork system call must allocates space for _____ process.

a) Child
b) Parent
c) Both a and b
d) None of these

SECTION – I

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

   A) Architecture of UNIX OS.

   B) Reading and writing pipe system calls.

   C) Building block primitives.

   D) Write an algorithm for bwrite.

   E) Direct and indirect blocks in inode.

3. A) Explain in detail allocation of disk blocks. **10**

   B) Explain scenarios for retrieval of a buffer from buffer pool. **10**

   OR

   B) Write and explain an algorithm alloc (allocating disk block). **10**

SECTION – II

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

   A) Process states and transitions.

   B) Allocation of swap space.

   C) Disk drivers.

   D) Process tracing.

   E) Swapping processes in.

5. A) Explain process region pages and page tables with an examples. **10**

   B) Explain different system calls involved in driver interface. **10**

   OR

   B) Write an algorithm exec. **10**

SLR-L – 22

Seat No.	

S.Y. MCA (Part – II) (Under Faculty of Engg.) Examination, 2017
3) OBJECT ORIENTED ANALYSIS AND DESIGN (Elective – I)

Day and Date : Wednesday, 17-5-2017 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. Choose the **correct** alternative. **20**

1) Composition is a stronger form of which of the following ?
   a) Aggregation b) Encapsulation
   c) Inheritance d) All of the above

2) Which of the following applies to a class rather than an object ?
   a) Query b) Update c) Scope d) Constructor

3) Which of the following is a technique for hiding the internal implementation details of an object ?
   a) Encapsulation b) Polymorphism
   c) Inheritance d) All of the above

4) The class diagram, component diagram, object diagram and deployment diagram are considered as types of
   a) Structural diagrams b) Behavioral diagrams
   c) Non-behavioral diagrams d) Non structural diagrams

5) The weak entities are represented in UML diagrams by using aggregations called
   a) Qualified segregation b) Non-qualified segregation
   c) Non-qualified aggregation d) Qualified aggregation

6) In UML diagrams, the relationship between the object and component parts is represented by
   a) Ordination b) Aggregation
   c) Segregation d) Increment

7) An operation can be described as
   a) Object behaviour
   b) Class behaviour
   c) Functions
   d) a, b

8) Which of these are part of class operation specification format ?
   a) Name
   b) Parameter list
   c) Return-type list
   d) All of the mentioned

9) Which of these are the heuristics ?
   a) Name classes, attributes and roles with noun phrases
   b) Name operations and associations with verb phrases
   c) Stick to binary associations
   d) All of the mentioned

10) Which of the following statement is true concerning objects and/or classes ?
   a) An object is an instance of a class
   b) A class is an instance of an object
   c) An object includes encapsulates only data
   d) A class includes encapsulates only data

11) A UML diagram includes which of the following ?
   a) Class name
   b) List of attributes
   c) List of operations
   d) All of the above

12) What does a simple name in UML Class and objects consists of ?
   a) Letters
   b) Digits
   c) Punctuation Characters
   d) All of the mentioned

13) What does a composite name consists of in a UML Class and object diagram ?
   a) Delimiter
   b) Simple names
   c) Digits
   d) All of the mentioned

14) A Class consists of which of these abstractions ?
   a) Set of the objects
   b) Operations
   c) Attributes
   d) All of the mentioned

15) A class is divided into which of these compartments
   a) Name Compartment
   b) Attribute Compartment
   c) Operation Compartment
   d) All of the mentioned

16) An attribute is a data item held by which of the following ?
   a) Class
   b) Object
   c) All of the mentioned
   d) None of the mentioned

17) A constructor operation does which of the following
   a) Creates a new instance of a class
   b) Updates an existing of a class
   c) Deletes and existing instance of a class
   d) All of the above

18) An object can have which of the following multiplicities ?
   a) Zero
   b) One
   c) More than one
   d) All of the above

19) Multiplicity is the same as what concept for an ERD ?
   a) Relationship
   b) Attribute
   c) Entity
   d) Cardinality

20) The fact that the same operation may apply to two or more classes is called what
   a) Inheritance
   b) Polymorphism
   c) Encapsulation
   d) Multiple Classifier

SECTION – I

2. Write short note on **any four** : **(4×5=20)**
   a) Merge, Fork and Join.
   b) Extend, Include and Generalize.
   c) OMG.
   d) Things.
   e) Classes.

3. A) Explain Object Diagram in detail. **10**
   B) Explain Activity Diagram with example. **10**

   OR

   B) Explain Rational Unified Process in detail **10**

SECTION – II

4. Write short note on **any four**. **(4×5=20)**
   a) Object Creation and Destruction.
   b) Processes and Threads.
   c) Events and Types.
   d) Interaction Diagram.
   e) Branching.

5. A) Explain State Machine with example. **10**

   B) Explain Deployment diagram with example. **10**

   OR

   B) What is Component ? Explain Internal Structure of Component. **10**

SLR-L – 23

Seat No.	

TYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
MOBILE COMMUNICATION

Day and Date : Thursday, 4-5-2017 Total Marks : 100
Time : 10.30 a.m. to 1.30 p.m.

Instructions : *1) Figures to the **right** indicates marks.*

*2) Q. **3A**. and Q. **5A** are **compulsory**.*

*3) Write an example **if** necessary.*

MCQ/Objective Type Questions

1. Multiple Choice Questions. **20**

1) The type of access used in GSM technology is
   a) FDMA/TDMA b) CDMA
   c) OFDMA d) None of the above

2) The type of access technology which can enhance the battery life is
   a) CDMA b) TDMA
   c) OFDMA d) None of the above

3) The core concept used in cellular technology is
   a) TDM b) Frequency reuse
   c) Code reuse d) None of the above

4) The process of channel coding, encryption, multiplexing and modulation for trans direction and reverse for reception are to be carried out by
   a) BTS b) BSC
   c) MSC d) MS

5) The modulation technique used for mobile communication systems during World War II was
   a) Amplitude modulation b) Frequency modulation
   c) ASK d) FSK

P.T.O.

6) _____ introduced frequency modulation for mobile communication systems in 1935.

a) Edwin Armstrong
b) Albert Einstein
c) Galileo Galilei
d) David Bohm

7) Fading of the received radio signals in a mobile communication environment occurs because of _____

a) Direct Propagation
b) Multipath Propagation
c) Bi-path Propagation
d) None of these

8) A antenna which attempts to direct all its energy in a particular direction is called as a _____

a) Directional Antenna
b) One to One Antenna
c) Propagation Antenna
d) Single Direction Antenna

9) A small division of a given geographical area is known as

a) Shell
b) Cell
c) Core
d) Kernel

10) Communication between mobile phone was started in

a) 1946
b) 1947
c) 1948
d) 1952

11) The layer responsible for routing of packets is _____

a) Data link
b) Network layer
c) Physical layer
d) Transport layer

12) In IEEE 802.11, a _____ is made of stationary or mobile wireless stations and an optional central base station, known as the access point (AP).

a) ESS
b) BSS
c) CSS
d) None of these

13) _____ is a process of converting plaintext into cipher text.

a) Authentication b) Decryption

c) Compression d) Encryption

14) Bluetooth transceiver devices operate in _____ band.

a) 2.4 GHz ISM b) 2.5 GHz ISM

c) 2.6 GHz ISM d) 2.7 GHz ISM

15) Range of Bluetooth devices are_____

a) Large b) Extended

c) Basic d) Short

16) In wireless ad-hoc network

a) Access point is not required b) Access point is must

c) Nodes are not required d) None of the mentioned

17) Infrared signals can be used for

a) Long-range communication b) Short-range communication

c) Both d) None

18) Specifications for a wireless LAN are called

a) Standard 802.3z b) Standard 802.3u

c) Project 802.3 d) IEEE 802.11

19) The communication between keyboard and computer is _____

a) Simplex b) Half-duplex

c) Full-duplex d) Automatic

20) Wireless LANs implement security measures in the _____

a) System Layers b) Data Link Layers

c) Sub Layers d) Multi Layers

SECTION – I

2. Write short note on (**any 4**). **20**
   a) A market for mobile communication.
   b) Cellular systems.
   c) GSM.
   d) Frequencies for radio transmission.
   e) A simplified reference model.

3. A) What is Wireless Communication ? Explain advantages and disadvantages of Wireless Communication. **10**
   B) Explain the needs for MAC algorithm. **10**

   OR

   B) Define modulation and explain different modulation techniques. **10**

SECTION – II

4. Write a short note on (**any 4**). **20**
   a) Bluetooth.
   b) WAP architecture.
   c) Mobile IP.
   d) Infrared Vs radio transmission.
   e) WLAN disadvantages.

5. A) Explain basic architecture of hierarchical mobile IPV6. **10**
   B) Discuss benefits of mobile Ad-hoc network. **10**

   OR

   B) Explain wireless datagram protocol. **10**

SLR-L – 24

Seat No.	

T.Y.M.C.A. (Part – I) (Under Faculty of Engg) Examination, 2017
DATA WAREHOUSING AND DATA MINING

Day and Date : Saturday, 6-5-2017 Total Marks : 100
Time : 10.30 a.m. to 1.30 p.m.

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

1. Multiple Choice Questions : **20**

1) What is ETL stand for ?
   a) Execute Transmit and Load
   b) Extract Transform and Load
   c) Execute Transform and Load
   d) All the above

2) The important aspect of the data warehouse environment is that data found within the data warehouse is _____
   a) Subject-oriented
   b) Time-variant
   c) Integrated
   d) All of the above

3) The data is stored, retrieved and updated in _____
   a) OLAP
   b) OLTP
   c) SMTP
   d) FTP

4) _____ describes the data contained in the Data warehouse.
   a) Relational data
   b) Operational data
   c) Metadata
   d) Informational data

5) _____ is the specialized data warehouse database.
   a) Oracle
   b) DBZ
   c) Informix
   d) Redbrick

P.T.O.

6) Record cannot be updated in _____

a) OLTP
b) Files
c) RDBMS
d) Data Warehouse

7) An operational system is _____

a) Used to run the business in real time and is based on historical data
b) Used to run the business in real time and is based on current data
c) Used to support decision making and is based on current data
d) Used to support decision making and is based on historical data

8) The partition of overall data warehouse is _____

a) Database
b) Data cube
c) Data mart
d) Operational data

9) The main organizational justification for implementing a data warehouse is to provide _____

a) Cheaper ways of handling transportation
b) Decision support
c) Storing large volume of data
d) Access to data

10) _____ is an important functional component of metadata.

a) Digital directory
b) Repository
c) Information directory
d) Data dictionary

11) _____ data are noisy and have many missing attribute values.

a) Preprocessed
b) Cleaned
c) Real-world
d) Transform

12) _____ clustering technique start with as many clusters as there are records, with each cluster having only one record.

a) Agglomerative
b) Divisive
c) Partition
d) Numeric

13) _____ clustering techniques starts with all records in one cluster and then try to split that cluster into small pieces.

a) Agglomerative
b) Divisive
c) Partition
d) Numeric

14) In _____ algorithm each cluster is represented by the centre of gravity of the cluster.

a) K-medoid
b) k-means
c) STIRR
d) ROCK

15) Pick out a k-medoid algorithm.

a) DBSCAN
b) BIRCH
c) PAM
d) CURE

16) In web mining, _____ is used to know which URLs tend to be requested together.

a) Clustering
b) Associations
c) Sequential analysis
d) Classification

17) The partition algorithm uses _____ scans of the databases to discover all frequent sets.

a) Two
b) Four
c) Six
d) Eight

18) The basic idea of the apriori algorithm is to generate _____ item sets of a particular size and scans the database.

a) Candidate
b) Primary
c) Secondary
d) Super key

19) _____ is the most well known association rule algorithm and is used in most commercial products.

a) Apriori algorithm
b) Partition algorithm
c) Distributed algorithm
d) Pincer-search algorithm

20) Rule based classification algorithms generate _____ rule to perform the classification.

a) if-then
b) While
c) Do while
d) Switch

SECTION – I

2. Write short note on **(any 4)** : **20**
   a) Data Explosion Problem.
   b) Data Warehousing Components.
   c) Browser tools.
   d) Cognos Impromptu.
   e) Data Mart.

3. A) What is Data warehouse ? How to map data warehouse in multiprocessor architecture ? **10**
   B) Which are the different operations perform on OLAP explain with example ? **10**

   OR

   B) Differentiate ROLAP, MOLAP and HOLAP. **10**

SECTION – II

4. Write a short note on (**any 4**) : **20**
   a) Applications of Web Mining.
   b) Agglomerative hierarchical clustering.
   c) Cluster analysis.
   d) BIRCH algorithm.
   e) Data Mining.

5. A) What is KDD process ? Explain the steps of KDD process ?. **10**
   B) Explain K-Means clustering algorithm with example. **10**

   OR

   B) Which is the different Trends Affecting in Data Mining ? **10**

SLR-L – 25

Seat No.	

TYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
INFORMATION SECURITY

Day and Date : Tuesday, 9-5-2017 Total Marks : 100
Time : 10.30 a.m. to 1.30 p.m.

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) 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) 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

3) A risk management strategy requires that information security professionals know their organizations information asset that is _____

a) Identify b) Classify
c) Prioritize d) All of the above

4) _____ 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

P.T.O.

5) Any _____information or material the unauthorized disclosure of which reasonably could be expected to cause serious damage to the national security.
   a) Secret data
   b) Confidential data
   c) Sensitive data
   d) None of the above

6) _____ comprises a wide variety of laws that govern a nation or state and deal with the relationships and conflicts between organizational entities and people.

7) 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

8) Internet protocol is vulnerable to denial for service is _____
   a) Sabotage
   b) Espionage
   c) Trespass
   d) None of the above

9) _____ 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

10) A _____ is a plan or course of action that conveys instructions from an organization's senior management to those who make decisions, take actions, and perform other duties.
   a) Policy
   b) Standards
   c) Practices
   d) All of the above

11) IT Act, 2000 is India's legislation regulating the use of computers, computer systems and computer networks, data and information in the _____ format.
   a) Electronic
   b) Digital
   c) Both a and b
   d) None of the above

12) A digital signature can be used with kind of message, whether it is _____
   a) Encrypted
   b) Decrypted
   c) Both a and b
   d) None of the above

13) 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

14) Violation of cyber laws rules of conduct lead to Govt. action as _____
   a) Imprisonment
   b) Fine
   c) a or b
   d) Both a and b

15) 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

16) 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

17) A Certifying Authority is a trusted body whose central responsibility is to _____ and provide directories of Digital Certificates.
   a) Issue
   b) Revoke
   c) Renew
   d) All of the above

18) A DSC shall not be suspended for a period exceeding _____ days unless the subscriber has been given an opportunity of being heard in the matter.
   a) Ten
   b) Fifteen
   c) Twenty
   d) Five

19) The controller shall make use of _____ that are secure from intrusion and misuse.
   a) Hardware
   b) Software
   c) Procedures
   d) All of the above

20) The _____ issue digital signature certificates for electronic authentication of users.
   a) CA
   b) CCA
   c) Both a and b
   d) None of the above

SECTION – I

2. Write short note on (**any 4**). **20**
   a) NSTISSC Security Model.
   b) Need of Security.
   c) Legal and Ethical issues.
   d) Security Policies.
   e) IDPS.

3. A) Explain in detail critical characteristics of information. **10**
   B) How classification and Priority assignment to an asset is done ? **10**

   OR

   B) What do you mean by cryptography ? Explain its methods and tools. **10**

SECTION – II

4. Write a short note on (**any 4**). **20**
   a) IT Act 2000 and Amendments.
   b) Digital Signature features.
   c) Power of Controller.
   d) Trademark Dispute.
   e) Staff of the Cyber Appellate Tribunal.

5. A) What are the importants of Information Technology Act 2000 ? **10**
   B) Describe powers of Controller of Certifing Authority. **10**

   OR

   B) Explain process for establishment of Cyber Appellate Tribunal. **10**

SLR-L – 26

Seat No.	

TYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
ADVANCED INTERNET TECHNOLOGY

Day and Date : Saturday, 13-5-2017 Total Marks :100
Time : 10.30 a.m. to 1.30 p.m.

1. MCQ. **20**

1) HTTP is _____ protocol.
   a) Application layer
   b) Transport layer
   c) Network layer
   d) None of the mentioned

2) 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

3) What is internet ?
   a) A single network
   b) A vast collection of different networks
   c) Interconnection of local area networks
   d) None of the mentioned

4) PHP is _____ scripting language.
   a) Client side
   b) Server side
   c) Both a and b
   d) None of these

5) What does PHP stand for
   a) Personal Home Page
   b) Hypertext Preprocessor
   c) Preprocessor Home Page
   d) Both a and b

6) PHP files have a default file extension of

a) .xml b) .html

c) .PHP d) None of these

7) Which of the looping statements is/are supported by PHP ?

a) For loop b) While loop

c) Foreach loop d) All of the above

8) If $ a = 12 what will be returned when ($ a = = 12) ? 5 : 1 is executed

a) 12 b) Error

c) 5 d) None of these

9) Which of the following PHP statements will output Hello World on the screen ?

a) echo (“Hello World”); b) print (“Hello World”);

c) printf (“Hello World”); d) both a and b

10) Which PHP in-built function will add a value to the end of an array ?

a) array_unshift() b) into_array ()

c) inend_array() d) array_push()

11) HTTP client requests by establishing a _____ connection to a particular port on the server.

a) User datagram protocol

b) Transmission control protocol

c) Broader gateway protocol

d) None of the mentioned

12) Which PHP function can be used to move the pointer to the previous array position ?

a) last() b) before()

c) prev() d) previous()

13) Which of the following package contains servlet classes ?

a) javax.servlet b) javax.servlet.http

c) Both of the above d) None of the above

14) Which of the following is true about init() method of servlet ?
   a) The init() method simply creates or loads some data that will be used throughout the life of the servlet
   b) The init() method is not called again and again for each user request
   c) Both of the above
   d) None of the above

15) The life cycle of a servlet is managed by
   a) Servlet context
   b) Servlet container
   c) The supporting protocol (such as http or https)
   d) All of the above

16) Each time the server receives a request for a servlet, the server spawns a new threadand calls
   a) Service b) Init
   c) Destroy d) None of these

17) _____ Executed once when the servlet is first loaded.
   a) Init b) Service
   c) Destroy d) None of these

18) Uses of Cookies
   a) Identifying a user during an e-commerce session
   b) IE ignores small error page by default
   c) Call remove Attribute discards a specific value
   d) None of the above

19) Which of the following is JSP directives ?
   a) Page b) Include
   c) Taglib d) All of the above

20) Which of the following are JSP objects
   a) Request b) Response
   c) Both a and b d) None of these

SECTION – I

2. Write short note on (**any 4**) : **(4×5=20)**
   1) Digital signature Authentication.
   2) Servlet vs CGI.
   3) E-commerce security.
   4) HTTP request and response.
   5) Characteristics 4C payment methods.

3. Answer the following.
   1) Explain E-commerce Architecture and also explain its type's advantages, disadvantages in detail. **10**
   2) Explain Get and Post methods of servlet with an example. **10**

   OR

   2) What is servlet ? Explain servlet API in detail. **10**

SECTION – II

4. Write short note on (**any 4**) : **(4×5=20)**
   1) Advantages of JSP.
   2) Scripting Elements of JSP.
   3) Data types in PHP.
   4) Web server Architecture.
   5) PHP string functions.

5. Answer the following :
   1) Explain directives in JSP with an example. **10**
   2) Explain Get and Post methods of PHP with an example. **10**

   OR

   2) What is session ? Write a PHP program to handle session. **10**

SLR-L – 28

Seat No.	

TYMCA (Part – I) (Under Faculty of Engg.) Examination, 2017
Elective – II : 3) FUZZY LOGIC AND ARTIFICIAL NEURAL NETWORK

Day and Date : Tuesday, 16-5-2017 Total Marks : 100
Time : 10.30 a.m. to 1.30 p.m.

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

MCQ/Objective Type Questions.

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

1) A fuzzy set A contains an object x to degree d(x), this is , a (x) = Degree ($x \in A$), and the map a : $X \rightarrow$ {Membership Degree} is called _____
   a) A set function
   b) A membership function
   c) Both a and b
   d) None of the above

2) The theory of fuzzy logic is based upon the notion of _____ graded membership and so are the function of cognitive.
   a) Relative
   b) Absolute
   c) Part of
   d) None of the above

3) The intersection between two crisp sets represents all those elements in the universe that _____
   a) Belongs to both sets
   b) Belongs to any on set
   c) Both a and b
   d) None of the above

4) Fuzzy sets viewed as _____of the basic concepts of crisp sets.
   a) Extension
   b) Generalization
   c) Both a and b
   d) None of the above

5) The properties _____ hold good for fuzzy relations.
   a) Commutative
   b) Associativity
   c) Idempotency
   d) None of the above

6) A fuzzy set works as a concept that makes it possible to treat fuzziness in a _____ manner.
   a) Qualitative b) Quantitative
   c) Both a and b d) None of the above

7) A fuzzy set wherein no membership function has its value equal to _____ is called subnormal fuzzy set.
   a) One b) Two
   c) Three d) None of the above

8) _____defuzzification method employs the algebraic sum of the individual fuzzy subsets of their union.
   a) Center of sums b) Weighted average
   c) Mean-max d) None of the above

9) _____ is the process of conversion of a fuzzy quantity into a precise quantity.
   a) Fuzzification b) Defuzzification
   c) Both a and b d) None of the above

10) Applications of the FLC are _____
   a) Traffic control b) Missile control
   c) Adaptive control d) All of the above

11) Sigmoidal function is _____ function that varies gradually between values 0 and 1 or – 1 and + 1.
   a) Continuous b) Discrete
   c) Logical d) None of the above

12) ANN structure can be represented by _____
   a) Graph b) Directed Graph
   c) Tree d) None of the above

13) Neural networks have shown remarkable progress in the recognition of visual images _____
   a) Handwritten characters b) Printed characters
   c) Speech recognition d) All of the above

14) Activity of neurons in the hidden layer is determined by the activities of the neurons in the _____

a) Input layer
b) Output layer
c) Both a and b
d) None of the above

15) A selection of tuning parameters _____ are required for efficient learning and design of stable BPN Network.

a) Momentum factor
b) Sigmoidal function
c) Threshold value
d) All of the above

16) A network is said to be _____ network if no neuron in the output layer is an input to a node in the same layer or in the preceding layer.

a) Feed forward
b) Feedback
c) Lateral feedback
d) None of the above

17) A neuron generates an output if the weighted sum of the input _____ the threshold value.

a) Exceeds
b) Equal to
c) Less than
d) None of the above

18) An associative memory belongs to the class of _____ feedforward neural network architecture.

a) Single layer
b) Multi layer
c) Both a and b
d) None of the above

19) A Hebb rule is widely used for finding the weights of _____ neural network.

a) Feedforward
b) BPN
c) Associative memory
d) None of the above

20) The BAM network performs _____ associative searches for stored stimulus responses.

a) Forward
b) Backward
c) Both a and b
d) None of the above

SECTION – I

2. Write short note on **any four**. **(4×5=20)**
   a) Properties of fuzzy sets.
   b) Operations on fuzzy relations.
   c) Features of membership functions.
   d) Defuzzification methods.
   e) Multiattribute decision making.

3. A) Explain with block diagram architecture and operation of FLC system. **10**
   B) Explain in brief deffuzzification methods. **10**

   OR

   B) Describe Fuzzy Rule based system. **10**

SECTION – II

4. Write short note on **any four**. **(4×5=20)**
   a) Learning methods.
   b) Medaline networks.
   c) MeCulloch-Pitts Neuron.
   d) Learning difficulties and improvements.
   e) Associative memory.

5. A) Explain working of multilayer feed forward back propagation network. **10**
   B) Explain in brief selection of various parameters in BNP. **10**

   OR

   B) Explain concept of Auto associative memory network. **10**

SLR-L – 29

Seat No.	

TY MCA (Part – I) (Under Faculty of Engg.) Examination, 2017
Elective – II : CLOUD COMPUTING

Day and Date : Tuesday, 16-5-2017 Total Marks : 100
Time : 10.30 a.m. to 1.30 p.m.

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

1. Multiple Choice Questions : **20**

1) _____ computing is making business application mobile and collaborative.
   a) Traditional b) Cloud
   c) Virtualization d) All of the above

2) Which cloud are mixture of private as well as public in cloud computing deployment model ?
   a) Private b) Public
   c) Hybrid d) Community

3) Which of the service model access the fundamental resource as well as physical resource and virtual machine ?
   a) PaaS b) SaaS
   c) IaaS d) None of the above

4) Which of the disk are used to store active area of memory ?
   a) Hard disk b) Secondary Storage
   c) Cache d) Virtual

5) Virtualization technology which point are included ?
   a) Physical machine b) Virtual machine
   c) Virtual network d) Both a and c

P.T.O.

6) _____ layer of data center network provide connectivity for server resource pool.
   a) Core layer b) Aggregation layer
   c) Access layer d) All of the above

7) _____ layer is first layer of OSI model.
   a) Network layer b) Application layer
   c) Data link layer d) None of the above

8) _____ is an open source cloud computing platform.
   a) IBM b) Google
   c) Apple d) OpenStack

9) _____ are responsible such as back-up and securing.
   a) End user b) Middle staff
   c) Providers d) Both a and c

10) _____ allow consumer to access computing resource through administrative access in virtual machine.
   a) Private b) Public
   c) Hybrid d) All of the above

11) _____ security begin with screening of employee who will access computer.
   a) Physical b) Logical
   c) Behavioral d) None of the above

12) _____ is one of the oldest professional hummunity.
   a) Authentication b) Encryption
   c) Cryptography d) All of the above

13) _____ services are assure that the data receiver exactly as sent authorized user.
   a) Confidentiality b) Integrity c) Anonymity d) All of the above

14) Which is one of the series issues in cloud computing environment ?

a) Data loss
b) Data stealing
c) Data integrity
d) None of the above

15) _____ platform also better overall performance by using different resources.

a) PaaS
b) SaaS
c) Multi-Cloud
d) Both a and b

16) Which of the following is true positive aspect of heterogenous in cloud ?

a) Multi-Cloud
b) Service
c) Business opportunity
d) Both b and c

17) _____ is core issue in many challenges in cloud computing.

a) Access control
b) Policy
c) Privacy
d) All of the above

18) Which service provides the application delivery through web browser to end user ?

a) SaaS
b) PaaS
c) IaaS
d) All of the above

19) _____ cloud environment provide customer identity and authentication information.

a) Traditional
b) Cloud
c) Multi-Tenant
d) Both a and c

20) In relation to data security, data may be _____ while it is under the preview of your service provider's infrastructure.

a) Tampered
b) Modified
c) Changed
d) None of the above

SECTION – I

2. Write short note on (**any 4**) : **20**
   a) Cloud deployment models.
   b) Benefits and disadvantage of Public Cloud model.
   c) Cloud Computing Platform as Service (PaaS).
   d) Virtualisation basics.
   e) Software as service offerings.

3. A) Explain in detail Private Cloud with its advantages and disadvantages. **10**

   B) Describe in brief infrastructure as Service offerings. **10**

   OR

   B) What are the top ten PaaS ten vendors ? Explain their products in brief. **10**

SECTION – II

4. Write a short note on (**any 4**) : **20**
   a) Security Concerns in Traditional IT.
   b) Challenges faced by Cloud Computing in terms of application security.
   c) Abuse and nefarious use of cloud computing.
   d) Insecure interfaces and APIs.
   e) Benefits of multi-cloud management.

5. A) Explain in detailed Multi Cloud Applications Management platform. **10**

   B) Describe in brief different security reference models. **10**

   OR

   B) What are current issues in cloud computing leading to future research directions ? **10**

———————

SLR-L – 31

Seat No.	

TY MCA (Part – I) (Under Faculty of Engg.) Examination, 2017
Elective – 1 : ARTIFICIAL TECHNOLOGY (New)

Day and Date : Thursday, 18-5-2017 Total Marks : 100
Time: 3.00 p.m. to 6.00 p.m.

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

1. Multiple Choice Questions : **20**

1) A problem in a search space is defined by
   a) Initial state
   b) Goal test
   c) Both a and b
   d) None of the above

2) A problem solving apporach works well for
   a) 8-Puzzle problem
   b) 8-queen problem
   c) Finding a optimal path from a given source to a destination
   d) Mars Hover (Robot Navigation)

3) Which search method takes less memory ?
   a) Depth-First Search
   b) Breadth-First Search
   c) Both a and b
   d) Linear Search

4) The _____ is a touring problem in which each city must be visited exactly once. The aim is to find the shortest tour.
   a) Finding shortest path between a source and a destination
   b) Travelling Salesman problem
   c) Map coloring problem
   d) Depth first search traversal on a given map represented as a graph

5) Which data structure conveniently used to implement DFS ?

a) Stacks b) Queues
c) Priority Queues d) All of the above

6) Which search uses only the linear space for searching ?

a) Best-first search b) Recursive best first search
c) Depth-First-Search d) None of the mentioned

7) A* algorithm is based on

a) Breadth-First-Search b) Depth-First-Search
c) Best-First-Search d) Hill climbing

8) Hill-climbing algorithm terminates when,

a) Stopping criterion met b) Global Min/Max is achieved
c) No neighbor has higher value d) None of the above

9) Blind searching is general term for

a) Informed Search b) Uninformed search
c) Both a and b d) None of the above

10) _____is an algorithm loop that continually moves in the direction of increasing valuel.

a) Up-Hill Search b) Hill-climbing
c) Hill algorithm d) Reverse-Down-Hill search

11) Which is created by using single propositional symbol ?

a) Complex sentences b) Atomic sentences
c) Composition sentences d) None of the above

12) How many proposition symbols are there in artificial intelligence ?

a) 1 b) 2 c) 3 d) 4

13) From which rule does the modus ponens are derived ?

a) Inference rule b) Module rule
c) Both a and b d) None of the above

14) Fuzzy logic is a form of

a) Two-valued logic
b) Crisp set logic
c) Many-valued logic
d) Binary set logic

15) Which of the following is an advantage of using an expert system development tool ?

a) Imposed structure
b) Knowledge engineering assistance
c) Rapid prototyping
d) All of the above

16) Input segments of AI programming contain(s).

a) Sound
b) Smell
c) Touch
d) All of the above

17) One of the main challenge/s of NLP is

a) Handling Ambiguity of senteces
b) Handling Tokenization
c) Handling POS-Tagging
d) All of the above

18) Machine Translation _____

a) Converts one human language to another
b) Converts human language to machine language
c) Converts any human language to English
d) Converts Machine language to human language

19) A _____ system has succeeded in finding a solution to a problem when it has found a sequence of operators that transforms the initial problem state into the goal state.

a) Planning
b) Expert
c) Fuzzy logic
d) None of the above

20) _____ results due to poor cognition on part of the listener.

a) Typographic errors
b) Orthographic errors
c) Phonetic errors
d) None of the above

SECTION – I

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

   a) The AI Problems

   b) Control Strategies

   c) Production System Characteristics

   d) Depth First Search

   e) Means End Analysis.

3. A) Explain in brief AI Problem Characteristics. **10**

   B) What is an AI problem of Hill Climbing ? Explain Hill Climbing problem types. **10**

   OR

   B) Describe in detail approaches to knowledge representation. **10**

SECTION – II

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

   a) Resolution Natural Deduction.

   b) Knowlede Representation using Non-monotonic Logic.

   c) Components of planning system.

   d) Semantic Analysis.

   e) Secondary Search.

5. A) What is an Expert System ? Give an Architectures of Expert system. **10**

   B) Describe in detail Resolution in predicate logic. **10**

   OR

   B) Explain the concept of non linear planning using constraint posting. **10**

SLR-L – 32

Seat No.	

Direct Second Year Students (Bridge Course) M.C.A. (Under Faculty of Engg.) Examination, 2017
DISCRETE MATHEMATICAL STRUCTURE (Paper – I)

Day and Date : Thursday, 18-5-2017 Total Marks : 100

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

***Instructions** : 1) Figures to the **right** indicate **full** marks.*

*2) **All** are **compulsory**.*

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

1) The union of the sets {1, 2, 5} and {1, 2, 6} is the set _____

a) {1, 2, 6, 1} b) {1, 2, 5, 6}

c) {1, 2, 1, 2} d) {1, 5, 6, 3}

2) The intersection of the sets {1, 2, 5} and {1, 2, 6 } is the set _____

a) {1, 2} b) {5, 6}

c) {2, 5} d) {1, 6}

3) Two sets are called disjoint if there _____ is the empty set.

a) Union b) Difference

c) Intersection d) Complement

4) Which of the following two sets are disjoint ?

a) {1, 3, 5} and {1, 3, 6} b) {1, 2, 3} and {1, 2, 3}

c) {1, 3, 5} and {2, 3, 4} d) {1, 3, 5} and {2, 4, 6}

5) The difference of {1, 2, 3} and {1, 2, 5} is the set _____

a) {1} b) {5}

c) {3} d) {2}

6) The complement of the set A is _____

a) A – B b) U – A

c) A – U d) B – A

7) The bit strings for the sets are 1111100000 and 1010101010. The union of these sets is _____

a) 1010100000 b) 1010101101

c) 1111111100 d) 1111101010

8) The set difference of the set A with null set is _____

a) A b) Null

c) U d) B

9) The Boolean function $[\sim(\sim p \wedge q) \wedge \sim(\sim p \wedge \sim q)] \vee (p \wedge r)$ is equal to the Boolean function

a) q b) $p \wedge r$

c) $p \vee q$ d) p

10) The truth table for $(p \vee q) \vee (p \wedge r)$ is the same as the truth table for

a) $(p \vee q) \wedge (p \vee r)$ b) $(p \vee q) \wedge r$

c) $(p \vee q) \wedge (p \wedge r)$ d) $p \vee q$

11) A _____ is an ordered collection of objects.

a) Relation b) Function

c) Set d) Proposition

12) The set O of odd positive integers less than 10 can be expressed by _____

a) {1, 2, 3} b) {1, 3, 5, 7, 9}

c) {1, 2, 5, 9} d) {1, 5, 7, 9, 11}

13) Power set of empty set has exactly _____ subset.

a) One b) Two

c) Zero d) Three

14) What is the Cartesian product of A = {1, 2} and B = {a, b} ?

a) {(1, a), (1, b), (2, a), (b, b)}
b) {(1, 1), (2, 2), (a, a), (b, b)}
c) {(1, a), (2, a), (1, b), (2, b)}
d) {(1, 1), (a, a), (2, a), (1, b)}

15) What is the cardinality of the set of odd positive integers less than 10 ?

a) 10
b) 5
c) 3
d) 20

16) Which of the following two sets are equal ?

a) A = {1, 2} and B = {1}
b) A = {1, 2} and B = {1, 2, 3}
c) A = {1, 2, 3} and B = {2, 1, 3}
d) A = {1, 2, 4} and B = {1, 2, 3}

17) The set of positive integers is _____

a) Infinite
b) Finite
c) Subset
d) Empty

18) What is the Cardinality of the Power set of the set {0, 1, 2} ?

a) 8
b) 6
c) 7
d) 9

19) A function is said to be _____, if and only if f(a) = f(b) implies that a = b for all a and b in the domain of f.

a) One-to-many
b) One-to-one
c) Many-to-many
d) Many-to-one

20) The value of $\lfloor 1/2.\lfloor 5/2 \rfloor \rfloor$ is _____

a) 1
b) 2
c) 3
d) 0.5

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

a) Explain minimum spanning tree with example.

b) Explain operation on set with example.

c) Partition of set with example.

d) Adjacency representation of graph.

e) Distributed Lattice and Bounded Lattice.

3. Explain Power Set and Cartesian Product with example. **10**
4. Explain tree traversal technique. **10**
5. Explain Transpose of Matrix. **10**
6. Explain Hamiltonian with example. **10**
7. Explain Bipartite Graph with example. **10**
8. Explain Eulerian Graph with example. **10**

———————

SLR-L – 33

Seat No.	

Direct Second Year Students (Bridge Course) M.C.A. (Engg.) Examination, 2017

Paper – II : OPERATING SYSTEM

Day and Date : Friday, 19-5-2017 Total Marks : 100

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

***Instructions** : 1) Figures to the **right** indicate f**ull** marks.*

*2) **All** questions are **compulsory**.*

1. Multiple Choice Questions : **20**

1) One of the most important aspects of operating system is the ability to _____

a) Single program b) Multi-program

c) Both a and b d) None of the above

2) A time shared operating system allows many users to share the computer _____

a) Serially b) Synchronously

c) Simultaneously d) None of the above

3) The operating system is responsible for

a) Scheduling processes b) Suspending processes

c) Process synchronization d) All of the above

4) Access to the shared resource _____ computation speed.

a) Increases b) Decreases

c) Optimize d) None of the above

5) A local area network connects computers within _____

a) Room b) A floor

c) A building d) All of the above

P.T.O.

6) The main advantage of the layered approach for operating system structure is _____ of construction and debugging.
   a) Simplicity b) Reusability
   c) Computability d) None of the above

7) The Apple Mac OS X operating system uses a _____ structure.
   a) Layered approach b) Microkernel's
   c) Modules d) Hybrid

8) Each process is represented by _____
   a) PCB b) TCB
   c) Both a and b d) None of the above

9) A semaphore S is _____ variable that is accessed only through two atomic operators wait() and signal().
   a) An integer b) Character
   c) Real d) None of the above

10) A procedure defined within monitor can access those variables declared _____ within the monitor and its formal parameters.
   a) Publically b) Locally
   c) Both a and b d) None of the above

11) _____ built into the processor itself are the only storage that the CPU can access directly.
   a) Main memory b) Registers
   c) Both a and b d) None of the above

12) Swapping requires a backing store. The backing store is commonly _____
   a) Main memory b) Cache memory
   c) Fast disk memory d) None of the above

13) Allocate the largest hole. This strategy produces the leftover is _____
   a) First fit b) Best fit
   c) Worst fit d) None of the above

14) _____ is a memory management scheme that permits the physical address space of process to be noncontiguous.
   a) Paging
   b) Fragmentation
   c) Segmentation
   d) All of these

15) A demand paging system is similar to a paging system with swapping where processes reside in _____
   a) Secondary memory
   b) Main memory
   c) Primary memory
   d) All of these

16) The simplest page replacement algorithm is _____
   a) FIFO
   b) LIFO
   c) LRU
   d) None of these

17) The user may want to erase the content of the file but keep its attributes is _____
   a) Writing a file
   b) Deleting a file
   c) Truncating file
   d) None of these

18) Partitions are known as _____
   a) Slices
   b) Minidisks
   c) Both a and b
   d) None of these

19) File system provide efficient and convenient access to the disk by allowing data to be _____
   a) Stored
   b) Located
   c) Retrieved
   d) All of these

20) The free space list is implemented as a _____
   a) Bit vector
   b) Byte vector
   c) Block vector
   d) None of these

2. Write short note on **(any four)** : **(4×5=20)**
   a) Real time operating system.
   b) Threads.
   c) Semaphores.
   d) Segmentation.
   e) Multiprocessor time sharing systems.

3. Explain with an example FCFS scheduling algorithm. **10**

4. Explain the terms deadlock prevention, avoidance, detection and recovery from deadlock. **10**

5. What do you mean by logical and physical address space ? **10**

6. Describe concept of allocation of frames and thrashing. **10**

7. Explain in-detail free space management in file system. **10**

8. What are the different network operating system features ? **10**

———————