

Total No. of Questions : 5]

SEAT No. :

P-3339

[Total No. of Pages : 5

[6027]-11

M.C.A. (Management)

IT 11 : JAVA PROGRAMMING

(2020 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) Attempt all questions.
- 2) Figures to the right indicate full marks.

Q1) Each multiple choice question carries half marks. All questions are compulsory. **[10]**

- i) In java, array elements are stored in _____ memory locations.
 - a) Random
 - b) Sequential
 - c) Sequential and Random
 - d) Binary search
- ii) _____ method simply return a string that appropriately describes on object of your class.
 - a) getchars()
 - b) to string()
 - c) to Char Array()
 - d) getstring()
- iii) Package P1 contains the following code
package 1;
public class student
{Body of student}
class Test
{Body of Test}
Import P1.*;
Class Result
{student S1;
Test t1;}
This code not compile because.

P.T.O.

- a) Class result should be declared public
 - b) Student class is not available
 - c) Test class is not available
 - d) Result body is not fully defined
- iv) Which of the following class in Java. io package defines a method to delete a file.
- a) Stack
 - b) File
 - c) String
 - d) Vector
- v) For a valid file object reference, we can create a new file using the following classes defined in Java. io package
- i) File output stream
 - ii) Random Access File
 - iii) Data Input
- a) i and ii only
 - b) ii and iii only
 - c) i and iii only
 - d) All i ii and iii
- vi) What type of servlet use these methods doGet(), doPost(), doHead(), doDelete(), doTrace()?
- a) Generic servlet
 - b) Http servlets
 - c) All of the above
 - d) None of the above
- vii) ITERATOR and LISTITERATOR can traverse over?
- a) lists
 - b) HttpServlets
 - c) All of the above
 - d) None of the above
 - e) Set
- viii) By convention, java packages begin with_____ letters while all the class names begin with an _____ letter.
- a) uppercase, uppercase
 - b) lowercase, lowercase
 - c) uppercase, lowercase
 - d) lowercase, uppercase
- ix) An _____ is an incomplete class that requires further specification.
- a) Abstract class
 - b) Final class
 - c) Static class
 - d) Super class

- x) Which of the following sub-classes are included in object class in Java:
- i) Dictionary
 - ii) Date
 - iii) Label
 - iv) Thread
 - a) i, ii and iii only
 - b) ii, iii and iv only
 - c) i, iii and iv only
 - d) i, ii and iv only
- xi) Which of these is a mechanism for naming and visibility control of a class and its content?
- a) Object
 - b) Packages
 - c) Interfaces
 - d) None
- xiii) Which of this access specifiers can be used for a class so that its members can be accessed by a different class in the same package?
- a) Public
 - b) Protected
 - c) default
 - d) No modifier
- xiii) Order of execution of constructions in Java Inheritance is
- a) Base to derived class
 - b) Derived to base class
 - c) Random order
 - d) None
- xiv) Which of the following is/are true statements?
- a) A class can extend only one class but can implement many interfaces.
 - b) An interface cannot extend many interfaces.
 - c) An interface can implement another interface.
 - d) An interface can implement a class
- xv) Which of the following is false statement about package in java?
- a) Package are used for preventing naming conflicts.
 - b) Providing controlled access : Protected and default have package level access control.
 - c) Packages cannot be considered as data encapsulation.
 - d) None of these
- xvi) Which of the following code is used to get an attribute in a HTTP session object in servlets
- a) session. get Attribute (String name)
 - b) session. alter Attribute (string name)
 - c) session. update Attribute (string name)
 - d) session. set Attribute (string name)

xvii) Which of the following are/is advantages of packages?

- a) Classes, even though they are visible outside their package, can have fields visible to package only.
- b) Packages avoid name classes
- c) We can have classes that are used by the packages, but not visible outside
- d) All statements are correct

xviii) The Java _____ specification defines an application programming interface for communication between the web server and the application program.

- a) Servlet
- b) Server
- c) Program
- d) Randomize

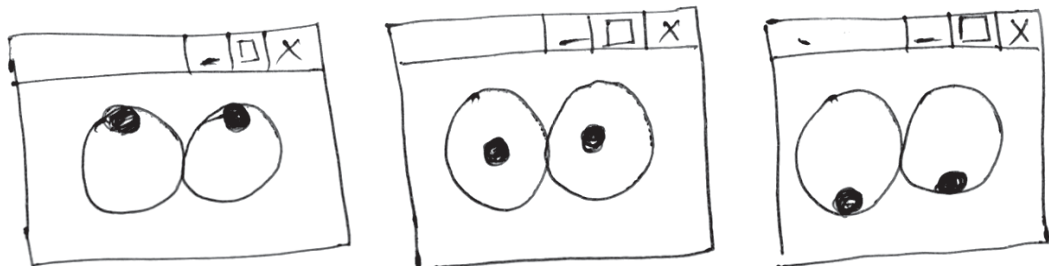
xix) What happens in case of multiple catch block?

- a) Either super or subclass can be caught first.
- b) The super class exception must be caught first.
- c) The super class exception cannot be caught first
- d) None of these

xx) Order of execution of constructors in Java inheritance is

- a) Base to derived class
- b) Derived to base class
- c) Random order
- d) None of these

Q2) a) Write a panel class Eyepanel and any other classes you need, such as event depending on whether the mouse cursor is above, inside, or below the eyes. The following three screen shots show the eyes in each of three positions ; [7]



- b) Write a program to draw a house in Java. [3]

OR

- a) Write a swing program for designing notepad and performing relevant actions like cut, copy, select all and etc. [6]
b) Write a program to design login form with proper validation. [4]

- Q3)** a) Design a following phone book application in JSP for accepting employee details like: first name, last name, city name and email Id and save it in database. Perform following operations :- [8]

- i) record in database
ii) retrieve all records in database
iii) update a record from database
iv) delete a record from database

- b) Differentiate between JSP and servlet. [4]

OR

- a) Write a servlet program for accepting student detail. Display proper message if invalid data is entered like name left blank and negative phone number, using MySQL store the values in the table stud (Name, Address, Phone, Email) if valid data is entered for all the fields and perform the various operations like Add, Delete, Next and previous. [8]
b) Explain types of driver in java. [4]

- Q4)** a) Differentiate between Array list and Linked list. [5]

- b) Explain thread life cycle. [3]

OR

- a) What is Hashing in collection Framework. [5]
b) Differentiate between run time and compile time polymorphism. [3]

- Q5)** a) How accessors and Mutators methods are used? [4]

- b) What is thread synchronization? [3]

- c) Write a Java program for mobile number validation using regex. [3]

OR

- a) Explain shallow cloning and deep cloning. [4]
b) Explain how deadlock can be avoided in thread. [3]
c) What is object serialization? [3]



Total No. of Questions : 5]

SEAT No. :

P-3340

[Total No. of Pages : 5

[6027]-12

M.C.A. (Management)

IT-12 : DATA STRUCTURE AND ALGORITHMS

(2020 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) From Q.2 to Q.5 having internal choices.

Q1) Multiple Choice Questions :

[20 × ½ = 10]

- a) In a balance binary tree the height of two subtree of every node can not differ by more than
 - i) 2
 - ii) 1
 - iii) 3
 - iv) 4
- b) The header in linked list contain
 - i) First record of actual data
 - ii) Last record of actual data
 - iii) Pointer to the last record of the actual data
 - iv) None of these
- c) What do you call the selected keys in the quick sort method?
 - i) Outer Key
 - ii) Inner Key
 - iii) Pivot Key
 - iv) Partition Key
- d) Which method of traversal does not use stack to hold nodes that are waiting to be processed?
 - i) D-search
 - ii) Breadth First
 - iii) Depth First
 - iv) Back tracking
- e) The knapsack problem where the objective function is to minimize the profit is _____
 - i) Greedy
 - ii) Dynamic 0/1
 - iii) Back tracking
 - iv) None of these

P.T.O.

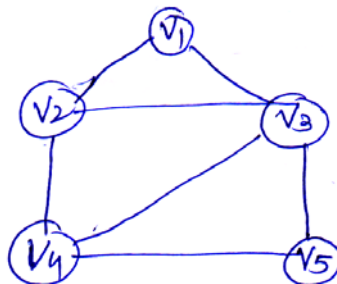
- f) What is the type of the algorithm used in solving the 8 Queens Problem?
- i) Back tracking
 - ii) Dynamic
 - iii) Branch & Bound
 - iv) None of these
- g) Popping is an act of
- i) Adding values
 - ii) Taking off values from stack
 - iii) Transferring values from stack
 - iv) None
- h) The optimal data structure used to solve Tower of Hanoi is _____
- i) Tree
 - ii) Heap
 - iii) Priority Queue
 - iv) Stack
- i) For a given array, there can be multiple ways to reach the end of the array using minimum number of jumps.
- i) True
 - ii) False
- j) Depth First Search is equivalent to which of the traversal in Binary trees?
- i) Pre order
 - ii) Post order
 - iii) Level order
 - iv) In order
- k) A graph in which all vertices have equal degree is known as _____.
- i) Complete graph
 - ii) Regular graph
 - iii) Multi graph
 - iv) Simple graph
- l) The time complexity of quick sort is _____.
- i) $O(n)$
 - ii) $O(\log n)$
 - iii) $O(n^2)$
 - iv) $O(n \log n)$
- m) To represent hierarchical between elements which data structure is suitable?
- i) Dequeue
 - ii) Priority Queue
 - iii) Tree
 - iv) Graph
- n) An algorithm in which we divide the problem into sub problem and then we combine the sub solutions to form solution to the original problem is known as _____.
- i) Brute force
 - ii) Divide and conquer
 - iii) Greedy algorithm
 - iv) None of these

- o) The complexity of linear search algorithm is _____.
 i) $O(n)$ ii) $O(\log n)$
 iii) $O(n^2)$ iv) $O(n \log n)$
- p) In a Max-heap, element with greatest key is always in the which node?
 i) leaf node
 ii) first node of left subtree
 iii) root node
 iv) first node of right subtree
- q) In general Backtracking can be used to solve?
 i) Numerical problem ii) Graph coloring problems
 iii) Exhaustive search iv) Combinational problem
- r) In how many directions do Queens attack each other?
 i) 4 ii) 3
 iii) 2 iv) 1
- s) If a problem can be broken into sub problems which are reused several times, the problem possesses _____ property
 i) Overlapping subproblem ii) Optimal substructure
 iii) Memorization iv) Greedy
- t) Which of the following problems is NOT solved using Dynamic Programming?
 i) 0/1 knapsack problem
 ii) Matrix chain multiplication problem
 iii) Edit distance problem
 iv) Fractional knapsack problem

Q2) a) Draw the AVL tree for the following [4]

4, 18, 12, 2, 3, 7, 5.

b) Apply the DFS Algorithm to traverse the following graph [4]



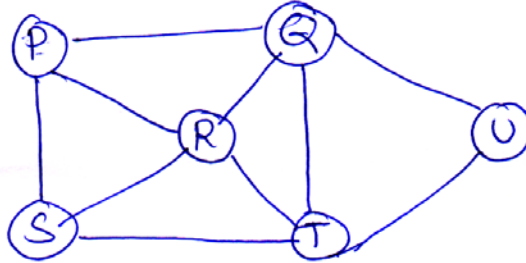
c) Explain linear probing. [2]

OR

- a) Draw Binary Search Tree for following data. [4]

35, 89, 43, 76, 29, 55, 87, 65.

- b) Apply the BFS algorithm to traverse the following graph. [4]



- c) Explain Hash Table. [2]

- Q3)** a) Apply Recursive Staircase algorithm to following problem Input : $n = 5$. Draw the figure and find solution. [4]

- b) Write an algorithm to implement circular queue using linked list. [4]

- c) Explain Hamiltonian Cycle. [2]

OR

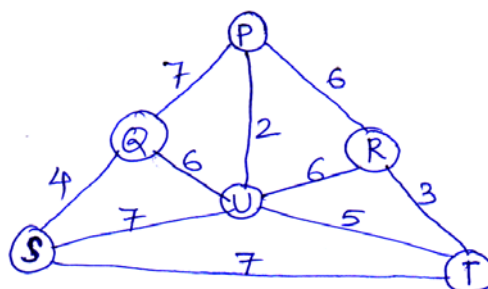
- a) Apply Rain Terrace algorithm to following problem Input : [2, 3, 0, 4, 1, 5]. Draw the figure and find solution. [4]

- b) Write an algorithm to insert element in stack using linked list. [4]

- c) Discuss combination sum. [2]

- Q4)** a) Sort the following data using Mergesort [22, 57, 31, 05, 99, 14, 24]. [4]

- b) Apply Prim's Algorithm to obtain minimum cost spanning tree for the following graph [4]



- c) Explain uses of queue. [2]

OR

- a) Write an algorithm to find GCD of 44 and 17 using Euclidean algorithm. [4]
- b) Write Dijkstra Algorithm. [4]
- c) Discuss Double linked list. [2]

Q5) a) Find the largest common subsequence for the following string using Dynamic Programming. [7]

$X = [a, b, a, a, b, a]$

$Y = [b, a, b, b, a, b]$

- b) Explain fast powering. [3]

OR

- a) Consider the given instance of 0/1 knapsack problem.

$N = 5, M = 11, P = (1, 6, 18, 22, 28), W = (1, 2, 5, 6, 7)$

Using dynamic programming determine the optimal profit and the solution vector. [7]

- b) Explain unique path with suitable example. [3]

□□□

Total No. of Questions : 5]

SEAT No. :

P-3341

[Total No. of Pages : 4

[6027]-13

M.C.A. (Management)

**IT-13 : OBJECT ORIENTED SOFTWARE ENGINEERING
(2020 Pattern) (Semester - I)**

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *For MCQ select appropriate choice from given options. Each carries ½ mark.*
- 3) *Draw neat diagrams wherever necessary.*
- 4) *Figures to right indicate full marks.*

Q1) MCQ :

[10]

- i) Object oriented systems are easier to _____.
 - A) Adapt changing requirements
 - B) Maintain and more robust
 - C) Promote greater design and code reuse
 - D) All of the mentioned
- ii) _____ model is not suitable for accommodating any changes.
 - A) Waterfall
 - B) Spiral
 - C) RAD
 - D) None of the above
- iii) A model that is the demo implementation of the system.
 - A) Prototype
 - B) Waterfall
 - C) Incremental
 - D) Agile
- iv) A spiral model has 2 dimensions ____ and _____.
 - A) diagonal, angular
 - B) radial, angular
 - C) radial, perpendicular
 - D) diagonal, perpendicular
- v) Which of the following models follow purely sequential approach?
 - A) RAD
 - B) Spiral
 - C) Waterfall
 - D) Prototype

P.T.O.

- vi) _____ combine the features of waterfall model & prototype model.
 - A) 4GL
 - B) Iterative
 - C) RAD
 - D) Spiral model
- vii) Which phase of RUP is used to establish a business case for the system?
 - A) Inception
 - B) Transition
 - C) Construction
 - D) Elicitation
- viii) The incremental model is
 - A) a reasonable approach when well-defined requirements
 - B) good approach when a working core product quickly
 - C) not used for commercial projects
 - D) approach to use projects with large development teams
- ix) RAD model has _____ phases.
 - A) 2
 - B) 3
 - C) 5
 - D) 6
- x) RUP stands for _____.
 - A) Rational Unified Process
 - B) Related Ultrasonic Process
 - C) Rapid Unified Process
 - D) None of the above
- xi) Requirements elicitation means _____
 - A) Gathering of requirement
 - B) Understanding of requirement
 - C) Getting the requirements from client
 - D) All of the mentioned
- xii) Requirement Engineering process includes which at these steps?
 - A) Feasibility study
 - B) Software requirement specification
 - C) Requirement Gathering
 - D) All of the mentioned
- xiii) Which is not a step of requirement engineering?
 - A) Analysis
 - B) Elicitation
 - C) Design
 - D) Documentation

- xiv) Which of the following is not a type of user interface?
- A) Command language based B) Menu based
C) Efficiency based D) Direct manipulation based
- xv) Which of the following is golden rule for interface design?
- A) Place the user in control B) Reduce user's memory load
C) Consistances D) All of the mentioned
- xvi) What are the characteristics of ASD life cycle?
- A) Feature based B) Iterative
C) Risk driven D) All of the mentioned
- xvii) In Agile model SDLC is carried out in the form of _____.
A) Documents B) Phases
C) Sprints D) Modules
- xviii) Agility refers to _____.
A) Allotment B) Advancement
C) Analysis D) Activeness
- xix) Spike solution is used to design which part of story card
A) Complex B) Simple
C) First D) Last
- xx) _____ is included in SRS?
A) Staffing B) Cost
C) Delivery Schedule D) Design Constraints

Q2) "All about Bikes" is a company dealing in spare parts, would like to change the existing system to a webbased application. The company has their products listed on the website through which they receive enquiries. These enquiries are processed online. The delivery note and invoice are sent by mail.

Write SRS for above case as per IEEE format. [8]

OR

UG college conducts lectures through Learning Management System (LMS) which has facility to add notes & reference material. College authority has decided to upgrade LMS by adding new features for conducting examination & generating result.

Write SRS in IEEE format for the above case. [8]

Q3) a) SPPU has decided to conduct online entrance exam for M.Sc. Following activities are carried out in this process.

- Student has to enrolled on website with their personal and educational details.
- Centers are allotted to students.
- Students appear for test at their allocated centers.
- Interview schedule is prepared per selected students.
- Shortlisted students have to take admission by paying fees & submitting necessary documents.

Draw use case & class diagram for the above case. **[20]**

OR

b) i) Draw state transition diagram for semiautomatic washing machine. **[10]**

ii) Draw activity diagram for ordering food through zomato. **[10]**

Q4) Write a short note on (Any 2) : **[8]**

- a) Scrum
- b) Extreame programing (XP)
- c) Software Engineering Vs Web Engineering
- d) Agile manifesto

Q5) Draw a UI for feedback form of 1 day technical workshop on Big data. **[4]**

OR

Draw a UI for booking CAB to travel within city. **[4]**



Total No. of Questions : 5]

SEAT No. :

P-3342

[Total No. of Pages : 4

[6027]-14

M.C.A. (Management)

IT 14 : OPERATING SYSTEM CONCEPTS

(2020 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) *All questions are compulsory.*
- 2) *Draw neat diagrams wherever necessary.*

Q1) Attempt the following multiple choice questions.

[20 × ½ = 10]

- i) Multiprogramming of the computer system.
 - a) Increase computing speed
 - b) Reduces memory utilization
 - c) Increases CPV utilization
 - d) None of the above
- ii) Scheduling of threads are done by _____.
 - a) Operating system
 - b) Input
 - c) Output
 - d) None of the above
- iii) The segment base contains the _____.
 - a) Starting logical address of the process
 - b) Segment length
 - c) Starting physical address of the segment in memory
 - d) None of the above
- iv) Virtual memory in memory hierarchy consists of _____.
 - a) RAM and Hard disk
 - b) Cache and Hard disk
 - c) Cache and RAM
 - d) All of the above
- v) When external fragmentation will not occurs?
 - a) First fit is used
 - b) No matter which algorithm is used, it will always occurs
 - c) Worst fit is used
 - d) Best fit is used

P.T.O.

- vi) A page fault occurs when a program attempts to access a block of memory that is _____.
 - a) Not stored in the physical memory
 - b) Dead lock occurs
 - c) The buffering occurs
 - d) None of the above
- vii) The state in which, the CPU spends less time in some actual productive work and more time in swapping.
 - a) Paging
 - b) Thrashing
 - c) Swapping
 - d) All of the above
- viii) Logical memory is broken into blocks of the same size called _____.
 - a) Frames
 - b) Pages
 - c) Stores
 - d) None of the above
- ix) The components of Real Time Operating System consist of _____.
 - a) The scheduler
 - b) Memory management
 - c) Symmetric multiprocessing
 - d) All of the above
- x) YouTube live streaming system is an example of the following _____.
 - a) Hard RTOS
 - b) Soft RTOS
 - c) Firm RTOS
 - d) None of the above
- xi) In Hard real time systems there is guarantee that _____.
 - a) All critical task are complete in time
 - b) Some critical tasks are allowed some delay
 - c) Some critical tasks are given tolerance
 - d) None of the above
- xii) Which of the following is not the characteristic of an embedded operating system?
 - a) Direct use of interrupts
 - b) Real time operation
 - c) I/O device flexibility
 - d) None of the above

- 3

Q2) a) What is memory management? [4]

b) Explain various memory management techniques in brief. [6]

OR

a) What is CPU state? [4]

b) Explain the role of CPU state in scheduling the processes. [6]

Q3) a) What is PCB? [4]

b) Explain various fields and information stored in PCB. [6]

OR

a) What is time slicing? [4]

b) How slicing duration affects the overall working of the system? [6]

Q4) a) What is Windows OS? [4]

b) Explain the overview of control panel in Windows OS. [6]

OR

a) What is mobile OS? [4]

b) Explain advantages of mobile operating system with applications. [6]

Q5) a) What is RTOS? [4]

b) Explain the real life applications of RTOS. [6]

OR

a) Explain loops in Linux shell scripting with examples. [4]

b) Write a shell script to print the content of the following file. [6]

Filename : 'my file. txt'

this is my text file.

Ubuntu is Linux Operating System.

VI is the editor in Linux

I know Linux Operating System.

▽▽▽▽

Total No. of Questions : 5]

SEAT No. :

P-3343

[Total No. of Pages : 5

[6027]-15

M.C.A. (Management)

IT15 : NETWORK TECHNOLOGY

(2020 Pattern) (Semester - I)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) All questions carry equal marks.
- 3) Draw neat diagrams wherever necessary.

Q1) Multiple Choice Questions :

[10]

- i) _____ are used for short-range communications such as those between a PC and a peripheral device.
 - a) Radio waves
 - b) Microwaves
 - c) Infrared waves
 - d) Not in the list
- ii) A _____ topology is a combination of several different topologies
 - a) Tree
 - b) Hybrid
 - c) Duplex
 - d) Tertiary
- iii) Microwaves are _____.
 - a) omnidirectional
 - b) unidirectional
 - c) bidirectional
 - d) Not in the list
- iv) An IP packet is called a _____.
 - a) user datagram
 - b) segment
 - c) datagram
 - d) none of the mentioned
- v) E-mail is a service handled by the _____ layer.
 - a) session
 - b) presentation
 - c) application
 - d) data link

P.T.O.

- xiii) In link state routing, each router receives information directly from _____.
- a) Every router on the network
 - b) Every router less than two units away
 - c) A table stored on the network hosts
 - d) Its nearest neighbors only
- xiv) Electronic mail uses which Application layer protocol?
- a) SMTP
 - b) HTTP
 - c) FTP
 - d) SIP
- xv) FTP is built on _____ architecture.
- a) Client-server
 - b) P2P
 - c) Data centric
 - d) Service oriented
- xvi) Caesar cipher is an example of
- a) Asymmetric key cryptography
 - b) Symmetric key cryptography
 - c) Both Asymmetric and Symmetric key cryptography
 - d) None of the mentioned
- xvii) RSA algorithm is an example of
- a) Public key encryption
 - b) Symmetric key cryptography
 - c) Both Asymmetric and Symmetric key cryptography
 - d) None of the mentioned
- xviii) Which of the following is not Passive attacks?
- a) Modification of message
 - b) Obtaining information
 - c) Release of message content
 - d) Eavesdropping
- xix) In statement “int count\=send(sockid,msg,msgLen,flags);”, count is
- a) bits transmitted
 - b) bytes transmitted
 - c) data transmitted
 - d) None of the mentioned

xx) Server announces willingness to accept the connection using _____ command

- a) accept()
- b) read()
- c) write()
- d) listen()

- Q2)** a) The received Hamming code word is 101101010. Using odd parity locate and correct the bit in error.
- b) Find the transmitted frame, if a series of 8-bit message blocks - 11100110 is to be transmitted across a data link using CRC for error detection. The generator polynomial 11001 is to be used.

[10]

OR

- a) Generate CRC code for the data word 1010001011 using the divisor 11101.
- b) Detect and correct the single error in the received Hamming code word 1011001011 using even parity.

[10]

- Q3)** a) Explain IP address format for Class A, Class B, Class C, Class D
Determine the network address for following IP Addresses:

- i) 83 .41.57. 10
- ii) 194.38. 14. 13
- iii) 143 .62. 11. 18

- b) Explain IPv6 Packet Format in detail.

[10]

OR

- a) Find the maximum number of hosts available on a class-B address with a subnet mask of 255.255.255.192.
- b) Find the subnet ID for the IP address 202.127.19.94 with a subnet mask of 255.255.255.248.

[10]

- Q4)** a) Explain SMTP protocol in detail.
b) Explain OSPF routing protocol in detail.

[10]

OR

- a) Explain DHCP scope resolution protocol in detail.
b) Compare POP3 and IMAP email protocols.

[10]

- Q5)** a) Explain socket programming in detail.
b) What are attacks? Write types of attacks in detail.

[10]

OR

- a) Write the client and server program for implementing the broadcasting in the local network.
b) Explain OSI model in brief.

[10]



Total No. of Questions : 5]

SEAT No. :

P3344

[Total No. of Pages : 5

[6027]-21

First Year M.C.A (Management)
IT 21-PYTHON PROGRAMMING
(2020 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

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

Q1) A) choose the correct option (½ marks each) [10]

- a) Which of the following is not an immutable data type?
 - i) Set
 - ii) String
 - iii) Tuple
 - iv) Byte
- b) Which of the following is an immutable as well as unordered collection?
 - i) Set
 - ii) String
 - iii) Dictionary
 - iv) Frozen set
- c) What is the output of this expression $2**3**2$?
 - i) 64
 - ii) 512
 - iii) 12
 - iv) Error
- d) The keyword that is used to define the block of statements in function?
 - i) def
 - ii) funBlock
 - iii) fune
 - iv) defFunction
- e) Which of the following is not a correct way of importing math module?
 - i) import * from math
 - ii) from math import *
 - iii) import math as mt
 - iv) from math import pi

P.T.O.

- f) The command that is used to install a third-party module in Python is
- i) pip
 - ii) import
 - iii) py
 - iv) install
- g) To include the use of functions which are present in the random library, we must use the option.
- i) random.h
 - ii) import.random
 - iii) import random
 - iv) random.random
- h) Which of the following statements can be used to check, whether an object “obj” is an instance of class A or not
- i) obj.isinstance(A)
 - ii) A.isinstance(obj)
 - iii) isinstance(obj, A)
 - iv) isinstance(A, obj)
- i) The members of a class, by default are
- i) Public
 - ii) Private
 - iii) Protected
 - iv) Static
- j) What is the syntax to lookup the maruti attribute in an object stored in the variable car?
- i) car → maruti
 - ii) car :: maruti
 - iii) car.maruti
 - iv) car ['maruti']
- k) Which character stand for starts with in regex?
- i) &
 - ii) \$
 - iii) ^
 - iv) #
- l) Which of the following special characters matches a pattern only at the end of the string?
- i) \ B
 - ii) \ X
 - iii) \ Z
 - iv) \ A
- m) What is the method name to retrieve the list of all active threads?
- i) enumerate()
 - ii) threads()
 - iii) getlist()
 - iv) getThreads()

- n) Command to keep thread in sleep mode?
- i) Thread.Sleep ii) Thread-Sleep
 - iii) ThreadSleep iv) thread-sleep
- o) _____ method is used to know the current file cursor position within the file.
- i) tell() ii) seek()
 - iii) offset() iv) Cursor()
- p) _____ represents column in NoSQL.
- i) Field ii) Document
 - iii) Database iv) Collection
- q) The most important object defined in NumPy is an N-dimensional array type called?
- i) narray ii) Ndarray
 - iii) ndarray iv) NdArray ()
- r) The object that is returned after reading CSV file in pandas is _____
- i) Character vector ii) Panel
 - iii) DataFrame iv) None
- s) Which of the following is used for line graph?
- i) plt.line () ii) plt.bar
 - iii) plt.plot iv) plt.scatter
- t) Which of the following is the standard data missing marker used in pandas?
- i) Null ii) None
 - iii) Nan iv) All

- Q2)** a) Write a program to check if the input year is leap year or not. Validate the input. [3]
- b) Write a program to find the factorial of a number using recursion. [3]
- c) What is inheritance? Explain the concept of multiple inheritance with the help of suitable example. [4]

OR

- a) What is tuple? What is the difference between list and tuple? Explain with example. [3]
- b) Write a program to print the sum of natural numbers using recursion. [3]
- c) What is inheritance? Explain the concept of multilevel inheritance with the help of suitable example. [4]

- Q3)** a) Write a program to reverse each word of "data.txt" file. [2]
- b) Write a python program using MongoDB database to create a "Books" collection having fields: title, Author (a list), Publisher, PubAddress, (a dict with keys like area, city, country), Price, ISBN. Accept input from user to insert documents. [3]
- c) Write a mongoDB program to update the "Books" collection given in Q.No. 3-b. [2]
- d) Write a program to accept decimal number and print its octal and hexadecimal equivalent. [3]

OR

- a) Write a program to read the contents of file and display occurrence of given character. [2]
- b) Write a python program using mongoDB database to create a "student" collection having fields: Student-ID, Name, Course, Mobile, Address. (a dict with keys like area, city, country, pin) Accept input from user to insert documents. [3]
- c) Write a MongoDB program to delete selected documents given in Q.No.3b. [2]
- d) What is dictionary in Python? Explain with examples. [3]

- Q4)** a) Write a program to validate email address using regular expression. Also explain the meaning of each and every special character of the regular expression used by you in this program. [4]
- b) Write user defined exception program in python which will except age as an input from the user and check whether the user is eligible for voting or not. If age<18 it should raise the exception as 'Not eligible for voting'. [4]
- c) Write a Note on : Modules and packages in Python. [2]

OR

- a) Write a program to validate URL using regular expression. Also explain the meaning of each and every special character of the regular expression used by you in this program. [4]
- b) Write multithread program, where one thread prints square of a number and another thread prints cube of numbers. Also display the total time taken for execution. [4]
- c) Explain anonymous function with example. [2]

- Q5)** a) Create a 5×5 2D numPy array and retrieve bottom right corner 2×2 array from it. [4]
- b) Given a dataFrame df in Pandas as below: [4]

City	MaxTemp	MinTemp	RainFall
Delhi	40	32	24.1
Bengaluru	31	25	36.2
Chennai	35	27	40.8
Mumbai	29	21	35.2
Kolkata	39	23	41.8

Write commands:

- i) to compute sum of every column of the dateFrame.
- ii) to compute mean of column rainFall.
- iii) to compute Median of the MaxTemp column.
- iv) to display all column names.
- c) Explain constructors in Python. [2]

OR

- a) Create a 4×3 numPy array and find it's column-wise mean. [2]
- b) Create a series from a numPy array and find frequency count of unique items of a series. [2]
- c) Create a pandas dataFrame using CSV file and perform a following:
- i) Display first 10 rows.
- ii) Display list of all columns. [4]
- d) Explain operator overloading in Python. [2]



Total No. of Questions : 5]

SEAT No. :

P3345

[6027]-22

[Total No. of Pages : 5

F.Y.M.C.A. (Management Faculty)
IT-22 : SOFTWARE PROJECT MANAGEMENT
(2020 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw neat labeled diagrams wherever necessary.*
- 3) *Calculator is allowed.*

Q1) Multiple Choice Questions.

[20×½=10]

- a) COCOMO stands for.
 - i) Composition Cost Model
 - ii) Common Control Model
 - iii) Constructive Cost Model
 - iv) Consumed Cost Model
- b) Delphi method is used for
 - i) Judgemental forecast
 - ii) Time series forecast
 - iii) Associative model
 - iv) All are the correct
- c) Abbreviation of the term SRS
 - i) Software Resource System
 - ii) Software Requirement Synopsis
 - iii) Software Requirement Syllabus
 - iv) Software Requirement Specification
- d) Which is a software configuration management concept that helps us to control change without seriously impeding justifiable change?
 - i) Baselines
 - ii) Source code
 - iii) Data model
 - iv) None of the mentioned

P.T.O.

- e) Which of the following option is used to measure the size of a user story for an Agile project?
- i) Story points
 - ii) Function points
 - iii) Velocity points
 - iv) Work breakdown points
- f) Which of the following is not a Software Configuration Management Activity?
- i) Configuration item identification
 - ii) Risk management
 - iii) Release management
 - iv) Branch management
- g) The project life cycle consists of ____.
- i) Understanding the scope of the project
 - ii) Objectives of the project
 - iii) Formulation and planning various activities
 - iv) All are Correct
- h) Following is (are) the components(s) of risk management...
- i) Risk Assessment
 - ii) Risk Control
 - iii) Risk Ranking
 - iv) All are Correct
- i) MS Project is a project management software program developed and sold by
- i) Sun Microsystems
 - ii) Microsoft
 - iii) Google
 - iv) Amazon
- j) _____ is not an agile method
- i) Waterfall
 - ii) Crystal
 - iii) Scrum
 - iv) Extreme Programming
- k) Which command creates an empty git repository in the specified directory?
- i) git init
 - ii) git log
 - iii) git reset
 - iv) none of the above
- l) How much time does each iteration in agile methodology take?
- i) 1-2 weeks
 - ii) 2-3 weeks
 - iii) 1-4 weeks
 - iv) 1-2 months

- m) Which one of the following can help you in creating a Schedule for the project even with the provided constraints?
- i) MS Word
 - ii) MS Excel
 - iii) MS Project
 - iv) MS PowerPoint
- n) CMM stands for _____.
- i) Capability Movement Model
 - ii) Construction Maturity Model
 - iii) Capability Maturity Model
 - iv) Constructive Maturity Model
- o) The working culture of an agile team is
- i) Collective
 - ii) Collaborative
 - iii) Connective
 - iv) Contemplative
- p) Git is a _____.
- i) Localized version control system
 - ii) Distributed version control system
 - iii) Centralized version control system
 - iv) None of the above
- q) In Risk management process what makes a note of all possible risks that may occur in the project?
- i) Identification
 - ii) Categorize
 - iii) Manage
 - iv) Monitor
- r) Function Point Analysis(FPA) count is developed by _____.
- i) Bary Bohem
 - ii) Alan Albrecht
 - iii) Pressman
 - iv) None of the above
- s) Which of the following is not the level of CMM?
- i) Defined
 - ii) Analysis
 - iii) Managed
 - iv) Optimizing
- t) Select the option that suits the Manifesto for Agile Software Development:
- i) Working software
 - ii) Individuals and Interactions
 - iii) Customer collaboration
 - iv) All of the above

Q2) a) Write Risk Management Process by considering any project you came across w.r.t. Risk Identification, Risk Analysis and Risk Mitigation. [6]

b) Explain use of MS Project to track agile project progress. [4]

OR

a) Consider a project with the following functional units. [6]

i)	Number of User Inputs	=	15
ii)	Number of User Outputs	=	21
iii)	Number of User Enquires	=	10
iv)	Number of User Files	=	15
v)	Number of External Interfaces	=	19

In addition to above, system requires significant

Data Communication (05)

Performance is very Critical (03)

Designed Code may be Moderately Reusable (04)

Complex Processing (04)

Other Complexity factors are treated as Average.

Compute the functional point for the project

b) Explain the benefits of agile project management in brief. [4]

Q3) a) A new project with estimated 325 KLOC system has to be developed. For the development of the project following things also required. [6]

- i) Volatility of the virtual machine environment is low (0.87)
- ii) Product Complexity is High (1.15)
- iii) Virtual machine experience is high (1.07)
- iv) Complexity of the product is Extra High (0.90)
- v) Use of software tools is very high (0.83)
- vi) Remaining all drivers are treated as Nominal.

Calculate ;

- 1) Effort
- 2) Development time
- 3) Average staff size
- 4) Productivity of the product

b) Explain Agile Manifesto in detail. [4]

OR

- a) “Splendid Holidays”, one of the distinguished service providers of International and Domestic Tour & Travel. Due to their reliable and flexible services, they have earned a large number of customers across the nation. They want to upgrade their ERP software. As a product owner you have to identify all possible epic, Features and User Stories for the same. [6]
- b) Differentiate : Agile project management v/s Traditional project management. [4]
- Q4)** a) Explain the roles of scrum master, product owner and development team. [6]
- b) Write a short note on GitHub. [4]
- OR
- a) Demonstrate value-driven development with suitable example. [6]
- b) “Team management drives productivity by getting employees to work better”. Justify. [4]
- Q5)** a) Explain the process to plan and execute iteration in agile with suitable example. [6]
- b) Highlight upon Project Management Process. [4]
- OR
- a) Explain the process of Retrospective, Making Team Decisions and Closing out Retrospective. [6]
- b) “CMM strives to assist organizations in improving the quality of their software development through implementation of processes”. Comment. [4]



Total No. of Questions : 5]

SEAT No. :

P-4227

[Total No. of Pages : 4

[6027]-23

F.Y. M.C.A. (Management)

IT-23 : ADVANCED INTERNET TECHNOLOGIES

(2020 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) All questions are compulsory.
- 2) Draw neat and labeled diagrams wherever necessary.

Q1) Choose the correct option (½ Mark each)

[10]

- i) Each table header is defined by a _____ tag.
 - a) <cell> ... </cell>
 - b) <tr> ... </tr>
 - c) <th> ... </th>
 - d) <td> ... </td>
- ii) HTML headings are defined with the _____ tags.
 - a) <head1> to <head6>
 - b) <p1>to<p6>
 - c) <h1>to<h6>
 - d) <h1>to<h3>
- iii) The CSS property used to control the element's font-size is -
 - a) text-style
 - b) text-size
 - c) font-size
 - d) None of the above
- iv) The CSS property used to make the text bold is -
 - a) font-weight: bold
 - b) weight: bold
 - c) font: bold
 - d) style: bold
- v) Which of the following extension is used to save the Node.js files?
 - a) .js
 - b) .node
 - c) .java
 - d) .txt
- vi) Choose the module which is used to server static resources in Node.js?
 - a) http
 - b) node-static
 - c) node-resource
 - d) static

P.T.O.

- vii) What does the fs module stand for?
- a) File Store
 - b) File Service
 - c) File System
 - d) None of the above
- Viii) Which NodeJS object specifies the name of the directory which contains the code?
- a) `_dirname`
 - b) Buffer
 - c) `_filename`
 - d) None of the above
- ix) Which of the following is the correct syntax for writing Angular expressions?
- a) `(expression)`
 - b) `{{expression}}`
 - c) `{{{expression}}}`
 - d) `[expression]`
- x) How to start Node REPL on command line?
- a) `$ node start`
 - b) `$ node`
 - c) `$ node repl`
 - d) `$ node console`
- xi) What is the use of Angular Controllers in the application?
- a) Angular controllers are used for controlling the data.
 - b) Angular controllers are used for displaying the data.
 - c) Both of the above are correct.
 - d) None of the above is correct.
- xii) Which command will show all the modules that are installed globally?
- a) `$ npm ls-g`
 - b) `$ npm ls`
 - c) `$ node ls-g`
 - d) `$ node ls`
- xiii) Which statement is commonly used for printing the PHP output?
- a) `write`
 - b) `php.write`
 - c) `log`
 - d) `echo`
- xiv) Which is not a valid variable name in PHP?
- a) `$age`
 - b) `$_age`
 - c) `$PersonAge`
 - d) `$1age`

- xv) What is the difference between Indexed array and Associative array in PHP?
- a) Index array has numeric index while associative array has named keys
 - b) Index array has numeric index while associative array has named keys and numeric index both
 - c) Index array is one-dimensional array with numeric index while associative array is two-dimensional array with numeric index
 - d) Index array has numeric index while associative array has one or more arrays
- xvi) Which PHP function is used to create an array?
- a) array()
 - b) arr()
 - c) new_array()
 - d) _array()
- xvii) Which PHP global variable is used to collect form data after submitting an HTML form with method="post"?
- a) \$_GET
 - b) \$_REQUEST
 - c) \$_POST
 - d) \$_ENV
- xviii) What does PDO stand for?
- a) PHP Database Orientation
 - b) PHP Data Orientation
 - c) PHP Data Object
 - d) PHP Database Object
- xix) Which variable is used to collect form data sent with both the GET and POST methods?
- a) \$_BOTH
 - b) \$REQUEST
 - c) \$_REQUEST
 - d) \$BOTH
- xx) Which of the following function returns the number of characters in a string variable?
- a) count(\$variable)
 - b) len(\$variable)
 - c) strcount(\$variable)
 - d) strlen(\$variable)

- Q2)** a) Explain types of CSS? Elaborate using external CSS example. [5]
b) Write a program using <SVG> tag to draw line, rectangle and triangle shapes. [5]

OR

- c) Describe <video> tag with all its properties of with example. [5]
d) Write CSS for paragraph tag: border 1. color-blue, font size-20, font name- arial, padding 50px. [5]

- Q3)** a) What is Node.js? Explain its working and features. [5]
b) Write a program in NodeJS using event handling to perform all basic arithmetic operations. [5]

OR

- c) What are the different types of modules in NodeJS? [5]
d) Write a program in NodeJS to perform file CRUD operations by using url module. [5]

- Q4)** a) What are the different services in Angular? [5]
b) Create an angular program which will demonstrate the usage of ngfor directive. [5]

OR

- c) Explain Angular project directory structure in detail. [5]
d) What is data binding in Angular? Explain with example. [5]

- Q5)** a) What is an associative array in PHP? Explain with example. [5]
b) Write a PHP script to design a form for exam registration. Insert 5 records in database and display all the inserted records on new page. (Assume suitable table structure) [5]

OR

- c) Explain static, local and global variables in PHP with suitable example.[5]
d) Explain all array sorting methods in PHP with suitable example. [5]



Total No. of Questions : 5]

SEAT No. :

P-3346

[Total No. of Pages : 5

[6027]-24

M.C.A. - I (Management)

IT - 24 : ADVANCED DBMS

(2020 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

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

Q1) Write the correct option or fill in the blanks of the following questions
(each ½ mark) [20 × ½ = 10]

- i) If in redundant file common fields are not matching then it result in _____.
 - a) Inconsistency
 - b) Duplication
 - c) Data Isolation
 - d) Data integrity problem
- ii) Ability to change the internal schema without affecting the conceptual schema to achieve _____ data Independence.
 - a) Logical
 - b) Physical
 - c) Analytical
 - d) Conceptual
- iii) What is the aim of NoSQL _____.
 - a) Not suitable for storing structural data
 - b) Allow storing non-structural data
 - c) New data format to store large dataset
 - d) An alternative to SQL databox to store textual data

P.T.O.

- iv) Normalization is a process of restructuring a relation to _____.
a) Minimize duplication of data in database
b) Maximize duplication of data in database
c) Make it of uniform size
d) Allow addition of data
- v) When a relation is in 2NF and there is _____ it is in 3NF
a) Transition Dependency
b) No Transition Dependency
c) Relational Dependency
d) No Relational Dependency
- vi) A schedule is _____ is it is conflict equivalent to a serial schedule
a) Conflict serraziable b) Conflicting
c) Non serraziable d) None of the mentioned
- vii) Which of the following are simplest NoSQL databases _____.
a) Key value b) Wide column
c) Document d) All of the mention
- viii) The Transaction can be read as well as the writes the data item with a _____ lock.
a) Shared b) Exclusive
c) Read d) Write
- ix) NoSQL database are is used mainly for handling large volume of _____ data.
a) Unstructured b) Structured
c) Semi Structured d) All of the above

- x) Which of the following is not NoSQL database?
- a) Cassandra
 - b) Mongi DB
 - c) SQL server
 - d) None of the above
- xi) The Architecture that is easy to load balance is
- a) Shared disk Architecture
 - b) Shared Nothing Architecture
 - c) Shared Memory Architecture
 - d) None of the above
- xii) The core principle of NoSQL is
- a) High availability
 - b) Low availability
 - c) Both high and Low availability
 - d) None of above
- xiii) The method of synchronizing concurrent task is
- a) Synchronization
 - b) Locking
 - c) Speed up
 - d) None
- xiv) 2 phase Locking which includes growing phase and _____.
- a) Shrinking phase
 - b) Release phase
 - c) Commit phase
 - d) Aquire phase
- xv) A sql query with location transparency needs of specify _____.
- a) Fragment
 - b) Location
 - c) Loctal formats
 - d) All of the above
- xvi) Roll back of transaction is normally used to
- a) recover from Transaction failure
 - b) update the transaction
 - c) retrieve old records
 - d) repeat a transaction

- a) filter
- b) records
- c) block
- d) numbers

xviii) Which of the following is not a recovery Technique _____.

- a) Deferred updates
- b) Immediate updates
- c) Two phase commit
- d) Recovery Management

xix) In cryptography, what is cipher

- a) Algorithm for performing encryption & decryption
- b) Encrypted message
- c) Both (a) and (b)
- d) Decrypted Message

xx) A Schedule in which each transaction in Execution automatically is a _____.

- a) Non-serial schedule
- b) Serial schedule
- c) Parallel schedule
- d) Non parallel schedule

The company database keeps track of employee, department and project. We store employee name, SSN, address, salary gender, date of birth, age. An Employee assigned to one department, but may work on several projects which are not necessary controlled by the same department. A particular employee manages the department. Each department has unique name, unique number and several locations. The department controls no. of projects each of which has a unique name and number. We want to keep track of the dependents of each employee for insurance purpose. We keep each dependent first name, sex, birth date and relationship of employee.

[10]

Define transaction with examples. Explain different states of transactions in detail with diagram. [10]

- Q3)** a) What are the problems of traditional file system? How it is overcome by using DBMS. [5]
- b) Explain multimedia Database architecture. [5]

OR

- a) What is Data Independence? Explain it's type with proper diagram. [5]
- b) What is spatial and temporal database in DBMS. [5]

- Q4)** a) Explain the term shadow paying. [5]
- b) Discuss the importance of encryption and public key Infrastructure in detail. [5]

OR

- a) What is Log based recovery? Discuss the deferred and immediate database modifications. [5]
- b) Describe the theory of discretionary occur control based on granting and revoking privileges. [5]

- Q5)** Explain Inter-operational and Intra - operational parallelism with suitable example. [10]

OR

State two phase commit protocol. Discuss the implications of a failure of the coordinator of some Participants. [10]

x x x

Total No. of Questions : 5]

SEAT No. :

P3347

[Total No. of Pages : 7

[6027]-25

F.Y.M.C.A. (Management)

MT - 21 : OPTIMIZATION TECHNIQUES

(2020 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Use of statistical table and non programmable calculator is allowed.*
- 3) *Figures to the right indicate full marks.*

Q1) Attempt the following MCQs (0.5 marks each). **[10]**

- a) In the LPP set of basic variables which are appeared in linear problem consist of
 - i) Slack & real variables
 - ii) Slack & artificial variables
 - iii) Departing basic variables
 - iv) Departing non basic variables
- b) Objective of sequencing problem is to find possible _____ which minimize total elapsed time
 - i) Sequence
 - ii) Ratio
 - iii) Solution
 - iv) Order
- c) Floats for critical activities will be always _____.
 - i) Zero
 - ii) One
 - iii) Smallest
 - iv) Largest
- d) Type of decision making environment is
 - i) Risk
 - ii) Certainty
 - iii) Uncertainty
 - iv) All of these
- e) A game is said to be fair if
 - i) both upper and lower values of the game are same & zero
 - ii) Upper & lower values of game are not equal
 - iii) Upper value is more than lower value of game
 - iv) None of these
- f) The determine (s) the equilibrium of Markov process _____.
 - i) Original state probabilities
 - ii) State vector
 - iii) Transition matrix
 - iv) Fundamental matrix

P.T.O.

- g) LPP involving more than two variables can be solved by
- i) Simplex method
 - ii) Graphical method
 - iii) Matrix minima method
 - iv) Hungarian method
- h) Time during which machine remains waiting or vacant in sequencing problem is called_____ time.
- i) Processing
 - ii) Waiting
 - iii) Idle
 - iv) Free
- i) Full form of CPM is_____.
- i) Critical path method
 - ii) Control path method
 - iii) Critical plan management
 - iv) Control path management
- j) Which of the following criterion is not used for decision making under uncertainty
- i) Maximin
 - ii) Minimax
 - iii) Maximax
 - iv) Minimize expected loss
- k) A mixed strategy game can be solved by
- i) algebraic method
 - ii) graphical method
 - iii) matrix method
 - iv) all of these
- l) Assigning random numbers in Monte carlo simulation it is important to_____.
- i) Develop cumulative probability distribution
 - ii) Use random numbers from random number table
 - iii) Use only single set of random numbers
 - iv) Use excel spreadsheets
- m) In simplex method feasible basic solution must satisfied.
- i) Non negativity constraint
 - ii) Negativity constraint
 - iii) Basic constraint
 - iv) Common constraint
- n) Total time required to complete all the jobs in a job sequencing problem is known
- i) elapsed time
 - ii) idle time
 - iii) processing time
 - iv) processing order

- o) Shortest possible time in which an activity can be achieved under ideal circumstances is known as_____.
- i) Pessimistic time estimate ii) Optimistic time estimate
iii) Expected time estimate iv) Most likely time estimate
- p) The difference between expected profit under conditions of risk and expected profit with perfect information is called_____.
- i) EvPI ii) EMI
iii) EV iv) None of these
- q) Game theory models are classified by the
- i) no. of players ii) sum of payoff
iii) no. of strategies iv) all of these
- r) The condition that system can be in only one state at any point in time is known as
- i) Transient state ii) Absorbent condition
iii) Mutually exclusive condition iv) Collectively exhaustive condition
- s) Objective function of linear programming problem is
- i) Constraint ii) Function to be optimized
iii) Relation between variables iv) None of these
- t) Full form of PERT is
- i) Program evaluation & Rate technology
ii) Program evaluation & Robot technique
iii) Project evaluation & robot technology
iv) Program evaluation & review technique.

Q2) a) Solve following LPP **[6]**

$$\text{Maximize } z = 50x_1 + 100x_2$$

Subject to constraints

$$x_1 + x_2 \leq 150$$

$$2x_1 + 3x_2 \leq 360$$

$$x_1, x_2 \geq 0$$

b) Find the saddle point and determine the optimal strategies for the game**[4]**

$$\begin{array}{c}
 \begin{array}{c} A \\ A_1 \\ A_2 \\ A_3 \end{array}
 \begin{array}{c} B_1 \ B_2 \ B_3 \end{array}
 \begin{bmatrix} 4 & 0 & 2 \\ 6 & -1 & 4 \\ 8 & -5 & -3 \end{bmatrix}
 \end{array}$$

OR

- a) Solve following LPP. [6]

$$\text{Maximize } z = 7x_1 + 6x_2$$

Subject to constraints

$$x_1 + x_2 \leq 4$$

$$2x_1 + x_2 \leq 6$$

$$x_1, x_2 \geq 0$$

- b) Solve the following game [4]

	Player B	
Player A	B1	B2
A1	3	5
A2	4	1

- Q3) a) Small project consist 7 activities whose time estimates are as follows [6]

Activity	Estimated Duration (weeks)		
(i-j)	Optimistic	Most likely	Pessimistic
(1-2)	1	1	7
(1-3)	1	4	7
(1-4)	2	2	8
(2-5)	1	1	1
(3-5)	2	5	14
(4-6)	2	5	8
(5-6)	3	6	15

Determine:

- Draw network diagram & identify critical path.
 - Identify critical activities & duration of project.
 - Determine probability of completing project in 13 weeks.
- b) In a toy manufacturing company suppose product acceptance probability are not known but following data known. [6]

Anticipated 1st year profit (Rs. '000')

		Acceptance	
Product	Full	Partial	Minimal
Good	8	70	50
Fair	50	45	40
Poor	-25	-10	0

Determine optimal decision under

- Maximax
- Maximin
- Minimax regret criteria

OR

Q3) a) The time & cost estimates of different activities are as given below. [6]

Activity (i-j)	Time(weeks)		Cost (Rs.)	
	Normal	CRash	Normal	Crash
(1-2)	3	2	300	400
(2-3)	3	3	30	30
(2-4)	7	5	420	580
(2-5)	9	7	720	810
(3-5)	5	4	250	300
(4-5)	0	0	0	0
(5-6)	6	4	320	410
(6-7)	4	3	400	470
(6-8)	13	10	780	900
(7-8)	10	9	1000	1200

Indirect cost is Rs. 50 per weeks.

- Draw the net work & identify critical path.
 - Crash relevant activities systematically & find optimal project duration & cost.
- b) A major consumer goods manufacturer wishes to decide new product bring out in the market which of the profit table is as follows (Profit per in units of Rs. 10000). [6]

Strategies	States		
	$S_1(0.4)$	$S_2(0.5)$	$S_3(0.1)$
A1	140	100	80
A2	160	130	120
A3	200	160	140

Determine:-

- Expected monetary value (EMV).
- Expected monetary value with-perfect information (EMVPI).
- Value of perfect information.

- Q4) a)** Seven jobs are to be processed through 2 machines A & B processing time (in hrs) are as follows. [6]

Jobs	1	2	3	4	5	6	7
Machine-A	10	9	7	15	18	20	14
Machine-B	12	8	7	12	10	6	13

Determine:

- Sequence of jobs.
 - Idle time for machine A & B.
- b) A market survey is made on 3 brands of breakfast foods x, y, z. Every time customer purchases new package following estimates for shift (in percent) are obtained. [4]

	Next		
Present	X	Y	Z
X	70	20	10
Y	30	50	20
Z	30	30	40

It is estimated that 30% people buy brand x, 20% buy brand y & 50% buy brand z. What will be the distribution of the customers for first and second period.

OR

- a) 5 Jobs are to be processed through 3 machines processing time (in hrs) are as follows. [6]

Determine:

- Sequence of jobs.
- Elapsed time for machine A, B & C.

Jobs	1	2	3	4	5
Machine-A	10	11	8	7	6
Machine-B	6	4	5	3	2
Machine-C	9	5	4	6	8

- b) Market share of brands A, B & C are 50%, 30% & 20% customers shift their brands in matrix as below. [4]

From	To		
	A	B	C
A	50%	30%	20%
B	20%	70%	10%
C	20%	20%	60%

Find:

- Transition matrix for brands.
- Find share at the end of period 1 & 2.

- Q5) a)** Distribution of demand for books has been found following information. **[4]**

Demand	15	16	17	18	19	20	21	22
No. of Copies	0.05	0.08	0.20	0.45	0.10	0.07	0.03	0.02

Generate demand for 20 times period using following random numbers, also calculate average no. of copies demand.

14, 2, 93, 99, 18, 71, 37, 30, 12, 10, 88, 13, 00, 57, 69, 32, 18, 8, 92, 73

- b) Explain the terms. **[4]**
- i) Basic solution.
 - ii) Dummy activity.

OR

- a) A confectioner sells items past data of demand per week is given below. **[4]**

Demand in (kg)	0	5	10	15	20	25
Probability	0.04	0.22	0.16	0.42	0.10	0.06

Generate demand for next 10 weeks & average demand per week using random numbers-

78, 99, 43, 62, 44, 2, 67, 32, 54, 75

- b) Explain the terms: **[4]**
- i) Degenerate solution.
 - ii) Float.



Total No. of Questions : 5]

SEAT No. :

P3348

[Total No. of Pages : 4

[6027]-31

Second Year M.C.A. (Management)

**IT-31 : MOBILE APPLICATION DEVELOPMENT
(2020 Pattern) (Semester - III)**

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

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

Q1) Multiple choice Questions. For each of the multiple type questions, choose the correct answer. **[10]**

- a) Which section provides a key component called Dalvik virtual machine.
 - i) Libraries
 - ii) Android Runtime
 - iii) Application Framework
 - iv) Application
- b) Android is based on which kernel?
 - i) Linux
 - ii) Windows
 - iii) Mac
 - iv) Redhat
- c) Choose the correct option regarding activity in android
 - i) An activity is a window that contains the user interface of your application
 - ii) An Application can have zero or more activities
 - iii) An application can have only one activity
 - iv) Option i & ii are correct
- d) Which of the following is a dialog class in android
 - i) AlertDialog
 - ii) DatePicker Dialog
 - iii) Progress Dialog
 - iv) All the above
- e) What is manifest xml in android
 - i) It has information about layout in an application
 - ii) It has all information about an application
 - iii) It has information about activities in an application
 - iv) It has information about Java classes in an application
- f) What does ES6 stands for ?
 - i) ECMAScript 6
 - ii) ECMA 6
 - iii) ECMA JavaScript 6
 - iv) E Javascript 6

P.T.O.

- g) Which of the following is built in database of android
- i) SQLite
 - ii) MySQL
 - iii) Oracle
 - iv) Mango Db
- h) Which of the following class in android displays information for a short period of time and disappear after sometime
- i) Toast class
 - ii) Log class
 - iii) Maketest class
 - iv) Main class
- i) Which method is called when SQLite database needs to be upgraded
- i) on update ()
 - ii) onupgrade ()
 - iii) onupgrade Data ()
 - iv) UpdateAll ()
- j) _____means it will occupy the complete space available on the display of the device
- i) wrap-content
 - ii) match-content
 - iii) match-parent
 - iv) wrap-parent
- k) What method you should override to use Android menu system?
- i) On create option Menu ()
 - ii) On create Menu ()
 - iii) On create context Menu ()
 - iv) On Menu created ()
- l) What is Dart?
- i) Both ii and iii
 - ii) Dart is a object-oriented programming Language
 - iii) Dart is used to create a frontend user interfaces
 - iv) None of the above
- m) Which of the following command is used to create a react app?
- i) Install -g create-react-app
 - ii) npm install create-react-app
 - iii) npx create-react-app veactapp
 - iv) None of the above
- n) The method that is called to clean up any Resources used by service is _____
- i) Stopself ()
 - ii) Onstop ()
 - iii) On Destroy ()
 - iv) Stop Service ()

- o) RPC in web services stands for
 - i) remote procedure calls
 - ii) representation procedure call
 - iii) reactive produce call
 - iv) reductant procedure call
- p) The extras can be set and read using the?
 - i) Sets Extras () and get Extras () methods
 - ii) Puts Extras () and gets Extras () methods
 - iii) Sets Extras () and gets Extras () methods
 - iv) Put Extras () and get Extras () methods
- q) In which directory XML Layout Files are stored.
 - i) /assets
 - ii) /Src
 - iii) /res/values
 - iv) /res/layout
- r) To display text which control will be used.
 - i) EditText
 - ii) Textview
 - iii) Label
 - iv) View Text
- s) A _____ is a piece of an activity which enables more modular activity design
 - i) Fragment
 - ii) Intent
 - iii) Filters
 - iv) Sub-Activity
- t) AAPT Stands for
 - i) Android Activity packaging Tool
 - ii) Android Asset Packaging Tool
 - iii) Android Action Packaging Tool
 - iv) None of the above

Q2) Explain window Architecture with a neat diagram [6]

OR

Explain Android Architecture with a neat diagram [6]

Q3) a) Write an android application to display Alert Dialog Box on click of a button [6]

b) What is Layout? Explain any one layout with suitable example [6]

OR

a) What is Intent? Explain types of intent with a suitable example [6]

b) Demonstrate Array Adapter using List view to display list of fruitsname [6]

Q4) a) Write an android using SQLite to create a table student (Sid, sname, scourse, smark) and update a record of student [6]

b) What is Android JSON parsing explain with suitable example [6]

OR

a) Write short note on Content value with example [6]

b) Write android code to parse the data from JSON Array and display it in a Toast [6]

Q5) a) Write steps to build simple Flutter application [6]

b) Write a short note on Android Project Folder structure [4]

OR

a) What is React Native? State the advantages of React Native [6]

b) What is view? Explain any two view with suitable example [4]



Total No. of Questions : 5]

SEAT No. :

P3349

[Total No. of Pages : 5

[6027]-32

Second Year M.C.A. (Management)

IT-32 : DATA WAREHOUSING AND DATA MINING

(2020 Pattern) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *Draw neat labelled diagrams wherever necessary.*

Q1) Answer the following multiple-choice questions.

[20×0.5]

- i) Generation of concept hierarchy who's depends on?
 - a) Static or dynamic data set
 - b) Only several relations
 - c) System call mechanism
 - d) Basic terminology
- ii) Which cache is use in connected and unconnected transformations?
 - a) Dynamic cache and static cache
 - b) Content Delivery Network cache
 - c) Database cache
 - d) Import cache & File system cache
- iii) Which is the Function used for K-means clustering?
 - a) K-mean
 - b) Heatmap
 - c) K-means
 - d) K-medians
- iv) What to use in Hierarchical clustering for finding the right number of clusters?
 - a) The Elbow method
 - b) Decision Trees
 - c) Dendrograms
 - d) Histograms
- v) _____collects all the information and the subjects about an entire organization.
 - a) Data mart
 - b) Virtual warehouse
 - c) Data warehouse view
 - d) Enterprise warehouse

P.T.O.

- vi) Which is not a valid layer in Three-layer data warehouse architecture in conceptual view?
- a) Processed data layer b) Real-time data layer
 - c) Derived data layer d) Reconciled data
- vii) Which is true about star schema?
- a) Suited for operational data processing
 - b) Used in operational systems
 - c) Used in operational data stores
 - d) Used to develop data warehouses & dimensional data marts
- viii) Dimensionality refers to
- a) Cardinality of key values in a star schema
 - b) The data that describes the transactions in the fact table
 - c) The level of detail of data that is held in the fact table
 - d) The level of detail of data that is held in the dimension table
- ix) Data transformation includes _____
- a) A process to change data from a detailed level to a summary level
 - b) A process to change data from a summary level to detailed level
 - c) Joining data from one source into various sources of data
 - d) Separating data from one source into various sources of data
- x) A cross tab section with one attribute is obtaining by using
- a) Slice b) Dice
 - c) Pivot d) Both slice and dice
- xi) What is true about data mining?
- a) Data mining is defined as the procedure of extracting information from huge sets of data
 - b) Data mining also involves other processes such as data cleaning, data integration, data transformation
 - c) Data mining is the procedure of mining knowledge from data
 - d) All of the mentioned

- xii) In a hypercube, each dimension belongs to _____ only.
- a) One cube
 - b) Multi cube
 - c) None of the mentioned
 - d) Both a and b
- xiii) Parametric Data Reduction involves
- a) Regression
 - b) Classification
 - c) Clustering
 - d) Association
- xiv) _____ is the application of data mining techniques to discover patterns from the web.
- a) Text mining
 - b) Multimedia mining
 - c) Web mining
 - d) Link mining
- xv) Google PR checker is a tool designed for _____
- a) Page Rank
 - b) Hits
 - c) Plagiarism
 - d) Summarization
- xvi) For KNN, which of the following distance measure is NOT valid for continuous variables?
- a) Manhattan distance
 - b) Hamming distance
 - c) Euclidean distance
 - d) Minkowski distance
- xvii) A collection of databases that offer a unified approach for organizing data and classifying data according to subject.
- a) Data mart
 - b) Enterprise data warehouse
 - c) Operational data store
 - d) Data mining
- xviii) _____ is a base document for data extraction.
- a) Logical data map
 - b) FP Tree
 - c) Granularity
 - d) Association
- xix) Microsoft SQL server is an example of
- a) HOLAP
 - b) MOLAP
 - c) ROLAP
 - d) SOLAP
- xx) Propagate the updates from the data sources to the warehouse.
- a) Data Load
 - b) Refresh
 - c) Data Transformation
 - d) Data cleaning

Q2) a) Define Data warehouse & explain architecture of data warehouse with neat diagram. [5]

b) Explain different data warehouse schemas. [5]

OR

Q2) a) Compare OLAP and OLTP. [5]

b) Explain kimball life cycle diagram in detail. [5]

Q3) a) Explain different steps involved in cleaning & transformation of data. [5]

b) What is text-mining? Explain applications of text-mining. [5]

OR

Q3) a) Brief OLAP operations with proper example. [5]

b) Explain data mining architecture. [5]

Q4) a) Apply FP-Growth tree algorithm to construct FP-Tree & find the frequent item sets. Consider following data set with minimum support 30%. [5]

TID	List of Items
1	Apple, Mango, Cocount, Banana
2	Banana, Berries, Coconut, Mango, Chikoo
3	Berries, Coconut, Dates, Grapes
4	Watermelon, Coconut, Mango
5	Apple, Banana, Chikoo, Dates
6	Apple, Berries
7	Apple, Coconut, Grapes, Banana
8	Mango, Watermelon, Coconut
9	Banana, Mango, Coconut

b) Consider the data set from **Q4) a)** and calculate support & confidence of following item sets. [5]

- i) { Apple, Coconut }
- ii) { Apple, Coconut, Banana }
- iii) { Mango, Watermelon }
- iv) { Coconut, Berries }
- v) { Banana, Mango, Coconut }

OR

- Q4) a)** Consider following data set and find the frequent item sets with minimum support count 2 using Apriori Algorithm. [5]

TID	Items
T1	Hot Dogs, Buns, Ketchup
T2	Hot Dogs, Buns
T3	Hot Dogs, Coke, Chips
T4	Chips, Coke
T5	Chips, Ketchup
T6	Hot Dogs, Coke, Chips

- b) Consider same data set in **Q4) a)** & generate association rules [minimum 3] [5]

- Q5) a)** Write K-mean clustering algorithm and apply on the following data set to group it into two clusters. [5]

$D = (0.5, 0.7, 0.9, 0.6, 0.4, 0.3, 0.10, 0.12, 0.14, 0.16, 0.35, 0.36, 0.11, 0.45, 0.58)$

- b) How KNN algorithm work? [5]

OR

- Q5) a)** $D = \{ 14, 13, 15, 16, 16, 19, 20, 35, 37, 39, 40, 41, 50, 56, 72, 17, 18, 12, 24, 22, 21 \}$

$K = 3$ $C_1 = 13$, $C_2 = 20$, $C_3 = 50$

Apply K-mean clustering. [5]

- b) Explain Agglomerative and divisive clustering mechanism. [5]



Total No. of Questions : 5]

SEAT No. :

P3350

[Total No. of Pages : 2

[6027]-33

M.C.A. - II (Management)

**IT - 33 : Software Testing and Quality Assurance
(2020 Pattern) (Semester - III)**

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

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

- Q1)** a) Write a detailed test plan for online grossary ordering mobile application. The application functionalities are registration, login, check items, price, delivery time etc. [6]
- b) Write the test cases for above application. [4]
- Q2)** a) Write the test cases for testing username and password to use email account. [5]
- b) Write data flow control analysis for following. [5]
- i) var i, x, sum
 - ii) i = 0
 - iii) sum = 0
 - iv) Input (x)
 - v) while (x != 0)
 - vi) sum = sum + x
 - vii) i = i + 1
 - viii) Input x
 - ix) End while
 - x) print (sum)

Q3) What do you mean by software quality assurance? Explain SQA activities.[10]

OR

Explain s/w quality factors and software quality metrics.

[10]

P.T.O.

- Q4)** a) Explain verification and validation in software testing. [5]
b) What are levels of testing? Explain in detail. [5]

OR

- a) What is Test Driven Development (TDD)? How TDD is performed? [5]
b) Compare Black Box and White Box testing. [5]

Q5) Write short notes on (any two): [10]

- a) Project Risk
b) Product Risk
c) Selenium
d) Appium
e) Incident Management



Total No. of Questions : 5]

SEAT No. :

P3351

[6027]-34

[Total No. of Pages : 5

Second Year M.C.A. (Management Faculty)
IT - 34 : KNOWLEDGE REPRESENTATION
AND ARTIFICIAL INTELLIGENCE : ML, DL
(2020 Pattern) (Semester - III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

- 1) *All questions are compulsory.*
- 2) *For MCQ select appropriate choice from options given.*
- 3) *From Q.2 to Q.5 having Internal choice.*
- 4) *Figures to the right indicate full marks.*

Q1) Multiple Choice Questions:

[20×½=10]

- a) Which of the following can improve the performance of AI Agent?
 - i) Perceiving
 - ii) Learning
 - iii) Observing
 - iv) Thinking Irrationally
- b) Which of the following is not a limitation of AI?
 - i) High Cost
 - ii) Lacking Creativity
 - iii) High Accuracy
 - iv) Unemployment
- c) In Wumpus world the knowledge based agent start from location
 - i) Room [1, 1]
 - ii) Room [2, 2]
 - iii) Room [1,2]
 - iv) Room [4,4]
- d) The symbolization for a conjunction is:
 - i) $p \rightarrow q$
 - ii) $p \wedge q$
 - iii) $p \vee q$
 - iv) $\sim p$
- e) In propositional logic, given P and $P \rightarrow Q$, we can infer
 - i) $\sim Q$
 - ii) $P \wedge Q$
 - iii) Q
 - iv) $\sim P \wedge Q$
- f) Resolution refutation method removes which logical symbol from given expression.
 - i) \wedge (AND)
 - ii) \vee (OR)
 - iii) \Rightarrow Implication
 - iv) \neg (NOT)

P.T.O.

- g) Which distance metric (s) are suitable for categorical variables to find the closest neighbors.
- i) Euclidean Distance
 - ii) Manhattan Distance
 - iii) Minkowski Distance
 - iv) Hamming Distance
- h) Which of the following measures is optional for comparing the goodness of the fit of competing regression models involving the same dependent variable?
- i) The Intercept
 - ii) The coefficient
 - iii) R-square
 - iv) Standard Deviation of the residuals
- i) Logistic regression is a _____ regression technique that is used to model data having a _____ outcome.
- i) Linear, Numeric
 - ii) Linear, Binary
 - iii) Nonlinear, Numeric
 - iv) Nonlinear, binary
- j) The correlation coefficient for two real-valued attributes is 0.85. What does this value tell?
- i) The attributes are not linearly related
 - ii) As the value of one attribute increases the value of second attribute also increases
 - iii) As the value of one attribute decrease the value of second attribute increases
 - iv) The attribute show a curvilinear relationship
- k) In model based learning methods, an iterative process take places on the ML models that are built, based on various model parameters called?
- i) Mini-Batches
 - ii) Optimized parameters
 - iii) Hyper parameters
 - iv) Super parameters
- l) In which of the following learning the teacher returns reward and punishment to learner?
- i) Active learning
 - ii) Reinforcement learning
 - iii) Supervised learning
 - iv) Unsupervised learning

- m) The most common Neural networks consist of_____ network layers.
- i) 1
 - ii) 2
 - iii) 3
 - iv) 4
- n) Which layer is the most important layers where features extraction take place, and adjustments are made to train faster and function better.
- i) Input layer
 - ii) Output layer
 - iii) Hidden layer
 - iv) None of these
- o) Which strategy does not prevent a model from over-fitting to the training data?
- i) Early stopping
 - ii) Dropout
 - iii) Data Augmentations
 - iv) Pooling
- p) Weight sharing occurs in which neural network architecture?
- i) CNN
 - ii) RNN
 - iii) Fully connected Neural Network
 - iv) CNN & RNN
- q) ANN used for:
- i) Pattern Recognition
 - ii) Classification
 - iii) Clustering
 - iv) All of these
- r) It is the difference between the validation error and training error.
- i) Std Dev
 - ii) Variance
 - iii) Dispersion
 - iv) Bias
- s) Chatbot is based on which AI technique?
- i) Big data
 - ii) Robotics
 - iii) Deep learning
 - iv) NLP
- t) What are the devices that sense the physical environments?
- i) Control unit
 - ii) Sensors
 - iii) CPU
 - iv) Firmware

Q2) a) What is knowledge representation? Explain the different techniques of KR. [4]

b) Consider the following. [6]

“As per the law, it is a crime for an American to sell weapons to hostile nation country an enemy of America, has some missiles, & all the missiles were sold to it by Robert, who is an American Citizen” Prove that “Robert is Criminal” using forward chaining algorithm.

OR

a) Why do we need Artificial Intelligence? [4]

b) Write a FOL of following statement. [6]

i) Mary loves everyone.

ii) No one talks.

iii) Everyone loves everyone.

iv) Everyone loves everyone except himself.

v) Someone loves everyone.

vi) Someone walks and someone talks.

Q3) a) State the Mathematical formulation of the SVM. [4]

b) Suppose 10000 patients get tested for covid-19, out of them, 9000 are actually healthy and 1000 are actually sick. For the sick people, a test was positive for 620 and negative for 380. For healthy people, the same test was positive for 180 and negative for 8820. Construct a confusion matrix for data and compute precision & recall for the data. [6]

OR

a) How SVM can be used for classification of linearly separable data? [4]

b) Use K-means clustering to cluster the following data into two groups. Assume cluster centroid are $m_1 = 2$ and $m_2 = 4$. The distance function used is Euclidean distance.

{2, 4, 10, 12, 3, 20, 30, 11, 25} [6]

Q4) a) Explain the use of Long Short Term Memory (LSTM). [4]

b) Why do we use pooling layers in CNN? [4]

c) Explain ANN. [2]

OR

a) Explain Convolutional Neural Network (CNN). [4]

b) Why do we prefer CNN over ANN for image data as input? [6]

Q5) Write a short notes on

[10]

- a) Issues in knowledge representation.
- b) Random forest.
- c) Building Block of DL.
- d) FPGA
- e) Speech recognition.

OR

- a) List out type of AI.
- b) Advantage of Logistic Regression.
- c) Detection in Deep learning.
- d) GPU
- e) Chatbot.



Total No. of Questions : 5]

SEAT No. :

P3352

[Total No. of Pages : 4

[6027]-35

S.Y. M.C.A. (Management)
IT - 35 : CLOUD COMPUTING
(2020 Pattern) (Semester -III)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates:

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

Q1) Write correct option (or) filling the blanks of following questions.*[each ½ Mark]*

- a) Broadly divide the cloud Architecture into?
 - i) 2
 - ii) 3
 - iii) 4
 - iv) 5
- b) Which of the following is Type - 1 Hypervisor?
 - i) Windows River simics
 - ii) Virtual server 2005 R2
 - iii) KVM
 - iv) Lynx secure
- c) Which of the following runs on Xen Hypervisor?
 - i) Azure
 - ii) AWS E2
 - iii) AWS EC3
 - iv) All of the mentioned
- d) Which of these is Identity in I AM?
 - i) Groups
 - ii) Users
 - iii) Roles
 - iv) All of the mentioned
- e) Which of the following services that need to be negotiated in service Level Agreement ?
 - i) Logging
 - ii) Auditing
 - iii) Regulatory compliance
 - iv) All of the mentioned
- f) The technology used to distribute service requests to resources is referred to as _____.
 - i) CND
 - ii) CDN
 - iii) CWD
 - iv) All of the mentioned

P.T.O.

- g) IAM group :
- i) Is same as IAM users
 - ii) Can be used to specify permission for a collection of users
 - iii) Is truly an identity
 - iv) All of these
- h) Which of the following is more sophisticated load balancer ?
- i) Workload managers
 - ii) Workspace managers
 - iii) Rackspace managers
 - iv) None of these
- i) Which of the following service provider provides the least amount of built in security.
- i) SAAS
 - ii) PAAS
 - iii) IAAS
 - iv) All of the mentioned
- j) Which of the following combination is possible in websphere ESB?
- i) XML/JMS
 - ii) SOAP/JMS
 - iii) SOAP/HTTP
 - iv) Governance
- k) What is the correct formula to calculate the cost of a cloud computing development
- i) $\text{Cost CLOUD} = \sum (\text{unit cost CLOUD} / \text{Revenue} + \text{cost CLOUD})$
 - ii) $\text{Cost CLOUD} = \sum (\text{unit cost CLOUD} / \text{Revenue} - \text{cost CLOUD})$
 - iii) $\text{Cost CLOUD} = \sum (\text{unit cost CLOUD} \times \text{Revenue} - \text{cost CLOUD})$
 - iv) None of the mentioned.
- l) What are the features of docker
- i) Easy Modeling
 - ii) Version control
 - iii) Placement /Affinity
 - iv) All of the mentioned
- m) Docker was developed in ____ .
- i) 2012
 - ii) 2014
 - iii) 2013
 - iv) 2015
- n) How many different protocol types are required for message passing in SOA.
- i) 2
 - ii) 4
 - iii) 1
 - iv) 3

- o) What ports does Docker registry use ?
- i) Port 3000
 - ii) Port 5000
 - iii) Port 8000
 - iv) None of the mentioned
- p) An application that provides for transaction overflow in a reservation system is an example of ____.
- i) Cloud computing / bursting
 - ii) Cloud provisioning
 - iii) Cloud servicing
 - iv) All of the mentioned
- q) Which of the following software can be used to implement load balancing?
- i) Apache mod - balancer
 - ii) Apache mod-proxy- balancer
 - iii) F6's BigIP
 - iv) All of the mentioned
- r) Which of the following essential object in WSDL is used to support message transfer?
- i) Bus
 - ii) Type
 - iii) Binding
 - iv) None of the mentioned
- s) Data stored in ____ domains doesn't require maintenance of a schema.
- i) "Simple DB"
 - ii) SQL server
 - iii) Storage
 - iv) Hardware
- t) Implementing ____ scanner is a tool that can scan an entire system for known vulnerabilities.
- i) Malware
 - ii) Vulnerability
 - iii) Worm
 - iv) Virus

Q2) Describe in detail about cloud service Models & Deployment models with example's. **[10]**

OR

Describe in detail about cloud computing, cluster computing & Grid computing with suitable example. **[10]**

Q3) a) What is Hypervisor & explain its types with example. [5]

b) Write a short note on service oriented Architecture [5]

OR

a) Differentiate between SOAP and Restful webservices (REST) [5]

b) Write a short note on service level Agreement. [5]

Q4) a) Differentiate between Multi - core Architecture & Multi - cloud Environment. [5]

b) Write a short note on cloud computing Architecture . [5]

OR

a) What is parallel programming? [5]

b) Explain cloud Migration strategies & process. [5]

Q5) Suggest the cloud computing Architecture to be implemented by pharma Industry. [10]

OR

How to maintain a Disaster situation in cloud & Explain the Concept in details. [10]



Total No. of Questions : 5]

SEAT No. :

P3353

[Total No. of Pages : 5

[6027]-41

Second Year M.C.A. (Management)

COMPUTER MANAGEMENT

421 : IT41-DevOps

(2020 Pattern) (Semester - IV)

Time : 2½ Hour]

[Max. Marks : 50

Instructions to the candidates:

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

Q1) A) Multiple choice questions.

[10]

a) What is DevOps?

- i) DevOps is a concept to enable a proper working environment to engineers from various verticals.
- ii) DevOps is an IT boom that promises nice career opportunities and helps learn complex concepts easily.
- iii) DevOps stands for D.E.V.O.P.S. acronym i.e Developers Ease Via Optimized Platform Solutions.
- iv) DevOps is a software engineering culture that unites development and operation teams.

b) What is Code-Commit?

- i) A promise to ensure that the developer will push the code by the end of the SDLC.
- ii) A way to record the changes to a repository and add a log message to describe the changes that were made.
- iii) A QR code gets generated and gets pushed to github. The process is code-commit.
- iv) It is a commitment to ensure that the developer codes in an efficient yet reliable manner ensuring all coding protocols are followed.

P.T.O.

- c) Iaas stands for?
 - i) Internet as a solution
 - ii) Infrastructures as a solution
 - iii) Infrastructure as a service
 - iv) Internet as a service
- d) IaC stands for.
 - i) Infrastructure as a Code
 - ii) Infrastructure as a Commit
 - iii) Infrastructure as a Concept.
 - iv) Infrastructure as a Configuration
- e) Which of the following is not a hypervisor provider
 - i) VM Ware
 - ii) Oracle virtual Box
 - iii) Virtual win
 - iv) Microsoft virtual pc
- f) Which of the following is a DevOps toolset?
 - i) Docker, Chef, Maven, Git
 - ii) MS-Office, Windowns10, Power DVD.
 - iii) Mozilla FireFox, Thunderbird, Outlook
 - iv) Tor, Bitwarden, Ubuntu10.10
- g) The Creater Git its :
 - i) Dennis Ritchie
 - ii) Benjamin Franklir.
 - iii) Steve jobs
 - iv) Linus Torvalds
- h) Linux architecture consist of
 - i) Unix, Core, Mantle, Shell
 - ii) Hardware, Kernel, Shell, Applications
 - iii) Os, User, Input device, Output device
 - iv) DB, Backend, Frontend and Load Balancer
- i) This linux command tells the name of the user currently logged in?
 - i) Who are you
 - ii) Whoami
 - iii) What is your name
 - iv) Username

- j) The Command “PWD” is used to:
 - i) Reset the password of the user
 - ii) Display the passwords of the user
 - iii) Password protect a file
 - iv) Print working directory.
- k) Which of the following OS does Docker run on ?
 - i) Linux
 - ii) Windows
 - iii) Mac OS
 - iv) All of the above
- l) Which Maven plugin creates the project structure?
 - i) Dependency
 - ii) Properties
 - iii) Archetype
 - iv) Execution
- m) What are the useful plugins in Jenkins?
 - i) Maven 2 Project
 - ii) Amazon EC2
 - iii) HTML Publisher
 - iv) All of the above
- n) Which of the following types of version Control Systems?
 - i) Local Version Control Systems
 - ii) Distributed Version Control System
 - iii) Centralized Version Control Systems
 - iv) All of the above
- o) Which of the following statements Defines feature flags?
 - i) Feature flags define which part of an app are deployed during the build process.
 - ii) Feature flags define the capabilities for various versions of an application.
 - iii) Feature flags are place holders for future functionality for an app.
 - iv) Feature flags allow you to show or hide features in an app

- p) Identify the methodologies that least impact the establishment of DevOps methodology?
- i) Waterfall software delivery
 - ii) Lean Manufacturing
 - iii) Continuous Software Delivery
 - iv) Agile Software Delivery.
- q) Who is known as the father of DevOps?
- i) Liam Debois ii) Patrick Debois
 - iii) Walter Dandy iv) None of these
- r) Which of the following is not a part of the development life cycle_____.
- i) Code ii) Plan
 - iii) Build iv) Operating
- s) _____ is something that is used for streamlining the development and deployment process.
- i) Continuous Delivery ii) Continuous Integration
 - iii) Continuous test iv) Continuous Intervention
- t) _____ is a combination of multiple pieces working together to become an automation tool.
- i) Bugzilla ii) Chef
 - iii) Ansible iv) Git

- Q2)** a) Explain SDLC Models, Lean, ITIL and Agile in details. [6]
 b) Write a short note on configuration management. [4]

OR

- a) Write the RPM and YUM installation in details. [6]
 b) Differentiate between DevOps & Agile. [4]

- Q3)** a) What is the difference between Git and Gittlub? [4]
b) Explain: [6]
i) Creating the branches
ii) Switching the branches
iii) Merging the branches of git

OR

- a) Differentiate between CVCS and DVCS. [4]
b) Explain 7C's of DevOps with suitable diagram. [6]

- Q4)** a) Explain Chef Components in details. [5]
b) Explain Chef Architecture with suitable diagrams. [5]

OR

- a) Discuss the core concepts of Maven. [5]
b) Explain Maven plugins in details. [5]

- Q5)** a) What is the lifecycle of a Docker container? Explain in details. [5]
b) Explain the methods to upload the images in docker registry and AWS. [5]

OR

- a) Name and explain the various Docker Components in details. [5]
b) Explain docker networking. [5]
i) Accessing containers.
ii) Linking containers.



Total No. of Questions : 6]

SEAT No. :

P-3354

[Total No. of Pages : 4

[6027]-42

M.C.A. (Management)

422 : BM - 41 : PPM AND OB

(2020 Pattern) (Semester - IV)

Time : 2½ Hours]

[Max. Marks : 50

Instructions to the candidates :

- 1) Draw neat diagrams wherever necessary.
- 2) Q.2 to Q.6 carries 8 marks each.

Q1) Select Correct Choice.

[10]

- i) Which theory assumes that people are naturally lazy and will avoid work and responsibilities if possible?
 - a) Theory X
 - b) Theory Y
 - c) Theory Z
 - d) All of the Above
- ii) Which of the following are the basic sources of stress?
 - a) Environment
 - b) Social Stressors
 - c) Physiological & Thoughts
 - d) All of the Above
- iii) A decision made before the occurrence of an external or internal changes called a _____ decision.
 - a) Reactive
 - b) Proactive
 - c) Both a and b
 - d) Systematic
- iv) Which of the following is not a characteristic of conflict?
 - a) expressed struggle
 - b) independent parties
 - c) perceived incompatible goals
 - d) perceived interference for outside parties
- v) Which one of the following is/are leadership theories?
 - a) Trait theory
 - b) Behavior theory
 - c) Contingency theory
 - d) All of these

P.T.O.

- vi) The worst approach to conflict resolution is :
- to want to win
 - to week a win
 - to asses your own mind set first
 - to see yourself as a team
- vii) _____ is known as “the father of scientific management”.
- Fredrick W. Taylor
 - Henry Fayol
 - Robert Owen
 - None of the above
- viii) The perceptual component of attitude is called _____.
- cognition
 - conation
 - affect
 - all of the above
- ix) Organizational behavior is_____.
- A science
 - An art
 - A science as well as an art
 - None of the above
- x) Who said, “Management is a multiple purpose organ that manages a business, manages a manager and manages workers and work”?
- Harold Konntz
 - Peter Drucker
 - Anonymous
 - Kenneth O ‘Donell
- xi) The factor(s) coming under philosophy of scientific management is (are):
- Co-operation
 - Maximum output
 - Harmony
 - All of the above
- xii) _____, weakness, threats, opportunities are the long form SWOT analysis
- Strength
 - Weakness
 - Threats
 - Opportunities
- xiii) Whose feelings and difficulties should the manager know for direction to become effective?
- Subordinates
 - Family
 - Society
 - Management
- xiv) Non programmed decisions are most likely to be made by:
- middle management
 - lower management
 - top management
 - supervisory management

- xv) What does situational theory of leadership emphasize?
- a) Personality traits
 - b) Events
 - c) Environment
 - d) Political situation
- xvi) “Planning is theoretical whereas controlling is practical”
- a) True
 - b) False
- xvii) The _____ leadership style is an expression of the leader’s trust in the abilities of his subordinates.
- a) Participative
 - b) Delegative
 - c) Authoritarian
 - d) All of the above
- xviii) Following is (are) the assumption(s) of Theory X.
- a) Workers hate to improve their efficiency
 - b) A worker prefers to get directed by others
 - c) No worker is ready to accept any responsibility
 - d) All of the above
- xix) _____ emphasizes the importance of workers in the accomplishment of enterprise objectives.
- a) Theory X
 - b) Theory Y
 - c) Theory Z
 - d) None of the above
- xx) Herzberg’s Theory of work motivation is also known as
- a) Maintenance theory of motivation
 - b) Motivation-Hygiene theory
 - c) Two factor theory of motivation
 - d) All of the above

Q2) Define Management with Managerial Levels. Being a Manager of an organization describe the social responsibilities of management in detail with suitable diagram. [8]

OR

What is Management? Being a Manager in reputed Organization What are the Skill sets received for Manager discuss your views.

Q3) Define Decision making with its environment under certainty and under uncertainty with suitable diagram. [8]

OR

Compare Scientific Management by Taylor and Administrative Management by Foyle with suitable example in detail.

Q4) As a Project Manager in one of the reputed MNC IT companies how you can create an effective team and resolve the issues/conflicts among the team members? Also being a leader discuss Qualities of Leadership. [8]

OR

As Project Manager of multinational company how you elaborate about the organizational structure and how it should be discuss it with suitable example.

Q5) What is Stress Management? Describe various sources and types of stress. How Yoga and Meditation is useful for stress management explain it with example. [8]

OR

Ms. Vandana got a job in an IT organization. Her co-workers knew a little about her and in this context the unknown and hidden areas will be larger and the open area will be small. As the others don't know much about her the blind spot also will be smaller. Design the Johari window for the same and explain it in detail with suitable diagram

Q6) Write Note on: (any two) : [8]

- a) Conflict Management
- b) Theory X and Theory Y
- c) Maslow's Need hierarchy Theory

