Total No. of Questions : 5]

SEAT No. :

PD-1685

[Total No. of Pages : 2

[6432]-14

M.C.A.-I (MANAGEMENT)

IT-24: Advance DBMS

(Revised 2020) (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) The owners of a small computer repair shop would like to keep track of the repair jobs for computers they repair, the items used for each repair job, the labor costs for each repair job, the repairmen performing each repair job and the total cost of each repair job.
When customers bring their computer in to be repaired, they make a deposit on the repair job and are given a date to return and uplift their computer. Repairman then perform repairs on the computers based on the repair job and detail the labor cost and the items used for each repair job.
When computers return they pay the total cost of the repair job less deposit, collect a receipt for their payment and uplift the repaired computer using this payment receipt.
Draw ERD & design proper table structure. **[8]**

OR

What is Normalization? Explain Normalization process upto 3NF with suitable Example. **[8]**

Q2) a) What is DBMS? Explain its characteristics. **[5]**

b) Explain characteristics of object oriented database. **[5]**

OR

a) Explain Architecture of DBMS. **[5]**

b) What is Mobile Database? Explain features, limitations of mobile database. **[5]**

P.T.O.

Q3) a) Explain any one technique to recover database using Log Based Recovery. **[5]**

b) Differentiate between DAC of MAC. **[5]**

OR

a) What is database Backup? Explain various types of Backup. **[5]**

b) Discuss various database security issues. **[5]**

Q4) a) Check whether the schedule S is conflict serializable are not S : $W_1(B)$, $R_2(A)$, $W_2(A)$, $W_2(B)$, $R_3(A)$, $R_3(B)$, $R_4(A)$, **[6]**

b) Explain the need of NOSQL. **[2]**

OR

a) Explain conflict and view serializability with suitable example. **[6]**

b) State the types of NOSQL Database. **[2]**

Q5) a) What do you mean by inter-query and intra-query Parallelism. **[7]**

b) Explain various distributed data storage strategies with suitable example. **[7]**

OR

a) Explain data partitioning techniques in parallel databases with example. **[7]**

b) Explain 2 & 3 phase commit Protocal in the distributed Databases. **[7]**

Total No. of Questions : 5]

SEAT No. :

PD1691

[Total No. of Pages : 2

[6432]-25

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

IT - 35 : CLOUD COMPUTING

(2020 Revised 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) What are the Advantage and Limitation of Cloud Computing? **[5]**

b) Explain Service Models in Cloud Computing in brief. **[5]**

OR

a) Differenciate between SAAS, PAAS and IAAS. **[5]**

b) Write short notes on Sales Force. **[5]**

Q2) a) What is Hypervisor? Explain types of Hypervisors. **[5]**

b) What is Virtual Machine? **[5]**

OR

a) Explain types of Virtualization. **[5]**

b) What is Para Virtualization? **[5]**

Q3) What are Web Services? Explain the different types of Web Services with suitable example. **[10]**

OR

P.T.O.

Write short note on : **[10]**

a) Cloud Availability.

b) Service level Agreement.

Q4) Differenciate between Parallel Programming and Parallel Processing. **[10]**

OR

Explain Cloud Computing Architecture & its characteristics with suitable diagram. **[10]**

Q5) What is Cloud Security and why is it required to maintain by Cloud Service Providers? **[10]**

OR

Write short notes on : **[10]**

a) Cloud Burshing.

b) QoS (Quality of Services).

Total No. of Questions : 5]

SEAT No. :

PD-1678

[Total No. of Pages : 3

[6432]-2
M.C.A. (Management)
IT12 : DATA STRUCTURE AND ALGORITHMS
(2020 Revised Pattern) (Semester - I)

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 an algorithm to implement deletion of node from specific position in doubly linked list. **[6]**

b) Write an algorithm to copy element from stock to queue. **[4]**

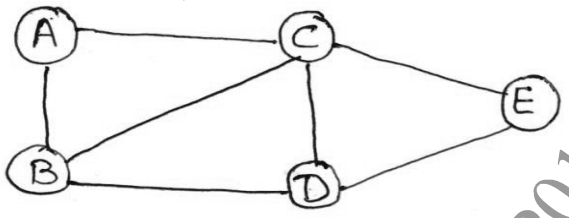
OR

c) Write an algorithm to calculate average of nodes data in singly linked list. **[6]**

d) Explain need of circular queue. **[4]**

Q2) a) Construct a Binary search tree for the following data. 46,16,80,91,11,56,13,21,50. Delete 46 from BST and reconstruct the binary search tree. **[6]**

b) Write adjacency list and BFS for following Graph. (Starting vertex : A) **[4]**



OR

c) Construct AVL tree for the following sequence of numbers. 50,20,60,10,8,15,65. **[6]**

d) Explain MAX heap with suitable example. **[4]**

P.T.O.

Q3) a) Apply the rain terrace algorithm to the following problem Input : [4,3,0,2,0,2,3] Draw the figure and find the solution. **[6]**

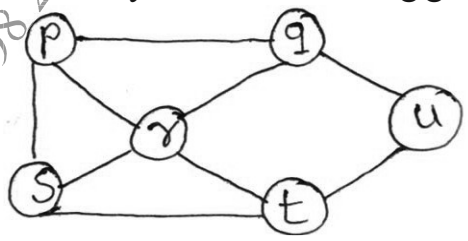
b) Explain power set with suitable example. **[4]**

OR

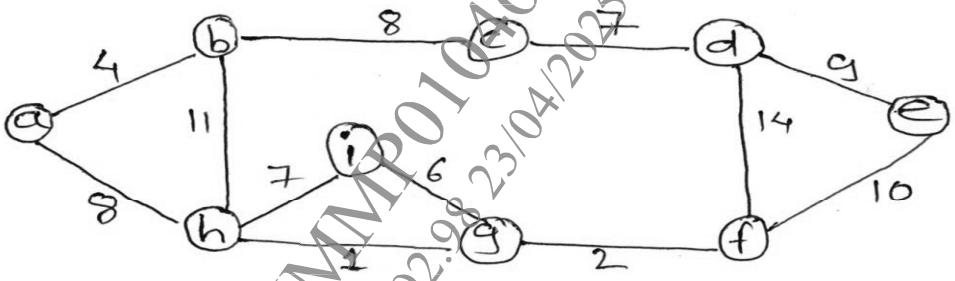
c) Apply the maximum subarray algorithm to the input :

arr = [– 2, 1, – 3, 4, – 1, 2, 1, – 5, 4] and find sum of maximum sub array. **[6]**

d) Find the Hamiltonian cycle from following graph. **[4]**



Q4) a) Apply kruskal's algorithm to obtain minimum cost spanning tree for the following graph. **[6]**



b) Explain Pascal Triangle. **[4]**

OR

c) Sort the following data using quick sort [15, 85, 35, 90, 40, 50, 70] **[6]**

d) Compare quick sort and merge sort. **[4]**

Q5) a) Find the length of longest common subsequence for following string using dynamic programming. **[7]**

S1 = ABCAB

S2 = AECB

b) Explain Integer partition. **[3]**

OR

c) Consider the instance of 0/1 knapsack problem n = 3, m = 6, w = (2, 3, 4), p = (1, 2, 5) using dynamic programming. Determine the optimal profit and the solution vector. **[7]**

d) Explain unique path. **[3]**

Total No. of Questions : 8]

SEAT No. :

PD1688

[Total No. of Pages : 2

[6432]-22

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

IT - 32 : DATA WAREHOUSING & DATA MINING

(Revised 2020 Pattern) (Semester-III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.8 are compulsory.***
2) ***Solve any Five questions from Q.2 to Q.7.***
3) ***Figures to the right indicate full marks.***

Q1) What is data preprocessing and explain steps of data preprocessing in detail?**[10]**

Q2) Explain various steps of data warehouse development life cycle in detail.**[10]**

Q3) Consider the transactions shown below. Assuming the Minimum Support = 60% and Minimum Confidence = 80%. **[10]**

a) Find all frequent item sets using Apriori algorithm.

b) Find all association rules using Apriori algorithm.

Transaction Id	Items Bought
T1	{Toast; Milk, Eggs, Bread}
T2	{Milk, Bread, Coconut, Eggs, Biscuits}
T3	{Milk, Coconut, Eggs, Biscuits}
T4	{Milk, Eggs, Bread}

P.T.O.

Q4) Discuss the K-nearest neighbour classification algorithm with suitable example. **[10]**

Q5) Explain K-means algorithm with example. **[10]**

Q6) What is a decision tree? How a decision tree works? **[10]**

Q7) What is Classification? Explain Artificial Neural Network with example. **[10]**

Q8) Write short notes on (Any Two) : **[10]**

a) Components of data warehouse.

b) Temporal and spatial data mining.

c) Genetic algorithm.

d) Knowledge Discovery Process (KDP).

✈ ✈ ✈

Total No. of Questions : 8]

SEAT No. :

PD1688

[Total No. of Pages : 2

[6432]-22

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

IT - 32 : DATA WAREHOUSING & DATA MINING

(Revised 2020 Pattern) (Semester-III)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.8 are compulsory.***
2) ***Solve any Five questions from Q.2 to Q.7.***
3) ***Figures to the right indicate full marks.***

Q1) What is data preprocessing and explain steps of data preprocessing in detail?**[10]**

Q2) Explain various steps of data warehouse development life cycle in detail.**[10]**

Q3) Consider the transactions shown below. Assuming the Minimum Support = 60% and Minimum Confidence = 80%. **[10]**

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b) Find all association rules using Apriori algorithm.

Transaction Id	Items Bought
T1	{Toast; Milk, Eggs, Bread}
T2	{Milk, Bread, Coconut, Eggs, Biscuits}
T3	{Milk, Coconut, Eggs, Biscuits}
T4	{Milk, Eggs, Bread}

P.T.O.

Q4) Discuss the K-nearest neighbour classification algorithm with suitable example. **[10]**

Q5) Explain K-means algorithm with example. **[10]**

Q6) What is a decision tree? How a decision tree works? **[10]**

Q7) What is Classification? Explain Artificial Neural Network with example. **[10]**

Q8) Write short notes on (Any Two) : **[10]**

a) Components of data warehouse.

b) Temporal and spatial data mining.

c) Genetic algorithm.

d) Knowledge Discovery Process (KDP).

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Total No. of Questions : 5]

SEAT No. :

PD1692

[Total No. of Pages : 1

[6432]-31

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

421-IT 41 : DevOps

(Revised 2020 Pattern) (Semester - IV)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carries equal marks.***

Q1) a) Differentiate between DevOps & Agile. **[5]**

b) What is version control system and explain its types with example (LVCS, DVCS, CVCS) **[5]**

OR

c) Explain RPM and YUM with suitable code. **[5]**

d) Explain the use of following GIT commands, Git add, git branch, git pull, git push, git clean. **[5]**

Q2) a) What is chef? Explain chef architecture with suitable diagram. **[10]**

OR

b) Explain the steps for installing the docker in Linux with suitable commands. **[10]**

Q3) a) Explain docker architecture in detail with suitable diagram. **[5]**

b) Explain the use of knife and nodes in chef. **[5]**

OR

c) How to create role in chef? Add some roles to the organization. **[5]**

d) Write all the steps installing docker on windows. **[5]**

Q4) a) Explain Maven Plugins with suitable diagram. **[5]**

b) Explain fetch, full and remote in details. **[5]**

OR

c) Explain Maven POM builds (pom. xml) **[5]**

d) Explain Exposing container ports, Container Routing in detail. **[5]**

P.T.O.

Q5) Write short notes (Any two) **[10]**

a) LEAN
b) Cloning in Git
c) Chef Console

OR

d) Docker Registry
e) Maven Local Repository
f) Merging the branches in Git

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Total No. of Questions : 5]

SEAT No. :

PD-1677

[Total No. of Pages : 2

[6432]-1

M.C.A. (Management)

IT11 : JAVA PROGRAMMING

(Revised 2020) (Semester - I)

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) Define abstract class? overides the methods of abstract class with suitable example. **[7]**

b) Write note on 'Static Keyword'. **[3]**

OR

c) Demonstrate how to achieve multiple inheritance mechanism using interface? **[7]**

d) Differentiate between shallow copy and Deep copy. **[3]**

Q2) a) Explain user defined exception with suitable example. **[5]**

b) Differentiate between string buffer and string builder. **[5]**

OR

c) Explain thread synchronization with suitable example. **[5]**

d) Differentiate between throw and throws. **[5]**

Q3) a) Defined linkedlist? Explain how to remove an element from linked list with suitable example. **[6]**

b) Write short note on characteristic of array list. **[4]**

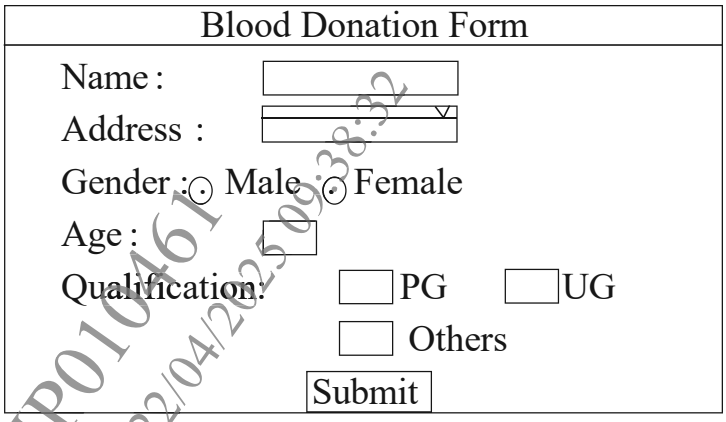
OR

c) Explain insert and delete operation in vector. **[6]**

d) Differentiate between array and arraylist. **[4]**

P.T.O.

Q4) a) Design following GUI using AWT components. **[10]**



OR

b) Demonstrate mouselistner interface with suitable example. **[10]**

Q5) a) Create table "EMPLOYEE" with fields (Emp-id, Emp-name, Emp-salary). Perform insertion and deletion operation through Java appliactions into database:

(Consider necessary assumptions.) **[10]**

OR

b) Create a web page using servelet to accept number from user and display number is odd or even. **[10]**

Total No. of Questions : 5]

SEAT No. :

PD1690

[Total No. of Pages : 3

[6432]-24
S.Y.M.C.A. (Management)
IT 34 : KRAI-ML-DL
(Revised 2020 Pattern) (Semester-III)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Use of calculator allowed.***
3) ***Figure on the side instructed full marks.***

Q1) a) What is intelligence and Artificial Intelligence? **[5]**

b) Explain SVM kernal in details. **[5]**

OR

c) Explain the techniquies of knowledge representation in details. **[5]**

d) Explain the process of clustering in details with suitable example. **[5]**

Q2) a) As per the law, it is a crime for an Indian to sell weapons to hostile nations. Country X, an enemy of India, has some missiles and all the missiles were sold to it by Ramesh, who is an Indian citizen.

Prove that Ramesh is a criminal. **[6]**

b) Construct the truth table of the following: **[4]**

i) $P \rightarrow (q \rightarrow P)$

ii) $(P \rightarrow q) \leftrightarrow (q \vee 7p)$

OR

c) Translate each of the following using FOL :- **[6]**

i) Not all cars have carburetors

ii) Some people are either religious or pious.

iii) No dogs are intelligent

iv) All babies are illogical.

v) All that glitters is not good.

vi) Some boys are sharp and intelligent.

d) Use a truth table to check the validity of the given premises and conclusion: **[4]**

If you are a hound dog, then you howl at the moon. You don't howl at the moon. Therefore, you are not a hound dog.

P.T.O.

Q3) a) Cluster the following eight points (with (x,y) representing locations) into three clusters:

A1 (2, 10), A2 (2, 5), A3 (8, 4), A4 (5, 8), A5 (7, 5), A6 (6, 4), A7 (1, 2), A8 (4, 9)

Initial cluster centres are A1 (2, 10), A4 (5, 8) and A7 (1, 2)

Use the k-means Algorithm to find the three cluster centres after the second iteration. **[6]**

b) Differentiate between supervised and unsupervised learning. **[4]**

OR

c) Using Naive Baye's Algorithm, find the prediction of following Data: **[6]**

OUTLOOK	TEMP	HUMIDITY	WIND	PLAYED
SUNNY	HOT	HIGH	WEAK	NO
SUNNY	HOT	HIGH	STRONG	NO
SUNNY	MILD	HIGH	WEAK	YES
SUNNY	COOL	NORMAL	WEAK	YES
SUNNY	MILD	NORMAL	STRONG	YES

Find:

i) P (SUNNY/YES)

ii) P (YES/SUNNY)

iii) P (TEM/HOT)

iv) P (WIND/STRONG)

d) Explain Reinforcement learning with suitable example. **[4]**

Q4) a) Find TFIDF of the following table: **[6]**

	W_0	W_1	W_2	W_3	W_4
r_0	1	1	0	0	0
r_1	1	0	0	-	-
r_2	0	1	1	-	1
r_3	1	0	1	0	0

Find:

i) TFIDF (r_0, w_3)

ii) TFIDF (r_1, w_4)

b) Explain Back propagation with suitable daigrams. **[4]**

OR

c) By using following single depth of input. **[10]**

3	1	3	5
6	0	7	9
3	2	1	4
0	2	4	3

Find:

i) Maxpool with 2 × 2 filter and stride 2.

ii) Average pool with 2 × 2 filter and stride 2.

Q5) a) Explain building blocks of Deep Learning in details. **[5]**

b) Explain Field programmable Gate Array in details. **[5]**

OR

c) Explain GAN with suitable examples. **[5]**

d) Explain speech recognition in AI. **[5]**

Total No. of Questions : 5]

SEAT No. :

PD1679

[Total No. of Pages : 2

[6432]-3

First Year M.C.A. (Management)

IT-13: OBJECT ORIENTED SOFTWARE ENGINEERING

(Revised 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.***
3) ***Figures to the right indicate full marks.***

Q1) a) Explain prototyping model for software system development. **[5]**

b) Explain agile process model - Extreme programming (xp). **[5]**

OR

a) Explain user's roles and their responsibilities in SDLC. **[5]**

b) Explain agile process model - crystal. **[5]**

Q2) Write Software Requirement Specification (SRS) as per IEEE template for the scenario of Poultry Farming System (PFS). This system having below functionalities as- **[10]**

a) Poultry details registration

b) Sanitation and hygiene details capturing

c) Proper feed & water supply information

d) Daily eggs production capturing

OR

Write a Software Requirement Specification (SRS) as per IEEE template for automobile manufacturing industries Employee Management System (EMS). **[10]**

Q3) Draw use case diagram and class diagram for developing a system for managing a restaurant's table reservation and food orders. **[10]**

OR

Draw Activity diagram and sequence diagram for BHIM UPI transaction processing system. **[10]**

P.T.O.

Q4) a) Draw the user interface screen for providing student feedback for teaching faculty and infrastructure facilities for the Institute. **[5]**

b) Draw collaboration diagram for online booking of movie tickets for metro multiplex. **[5]**

OR

a) Draw the user interface screen for agriculture exhibition visit gatepass generation. **[5]**

b) Draw state transition diagram for cybercrime complaint registration. **[5]**

Q5) Write a short note on (Any 2) **[2×5=10]**

a) Class and object

b) Association and links

c) Feature Driven Development (FDD)

Total No. of Questions : 5]

SEAT No. :

PD-1680

[Total No. of Pages : 2

[6432]-4

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

IT-14: Operating System Concepts

(Rev. 2020) (Semester - I)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates :

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

2) ***Draw neat diagrams.***

Q1) a) What is CPU state? Explain the role of CPU state in scheduling the process. **[5]**

b) What is deadlock? Explain the necessary conditions for its occurrence and how deadlock can be detected. **[5]**

OR

a) What is memory management? Explain memory management Technique in detail. **[5]**

b) Explain process control block. **[5]**

Q2) What is mobile operating system? Explain types and advantages of mobile operating system with examples. **[10]**

OR

Explain following : **[10]**

i) Distributed operating system

ii) Types of Microprocessor

Q3) a) What is RTOS? Explain the components and characteristics of RTOS. **[5]**

b) Explain LINUX file structure in detail. **[5]**

OR

a) What is Embedded OS? Explain the features of it in detail. **[5]**

b) Explain the overview of control panel in Windows OS. **[5]**

P.T.O.

Q4) a) Write a shell script program for factorial using following number. **[5]**

b) Describe any 5 commands of Linux. **[5]**

OR

a) Write a shell program to add two numbers using function. **[5]**

b) Explain different types of variables using shell script. **[5]**

Q5) Write short note [Any Two]: **[10]**

a) CPU scheduling Algorithms.

b) Overview of LINUX Kernel.

c) Demand Paging

d) Uniform Memory Access (UMA)

Total No. of Questions : 5]

SEAT No. :

PD1686

[Total No. of Pages : 4

[6432]-15
First Year M.C.A. (Management)
MT - 21 : OPTIMIZATION TECHNIQUES
(Revised 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-programable calculator is allowed.***
3) ***Figures to the right indicate full marks.***

Q1) Use the simplex method to solve the following LP problem. **[10]**

Maximize $Z = 3x_1 + 5x_2 + 4x_3$ Subject to the constraints

$2x_1 + 3x_2 \le 8,$

$2x_2 + 5x_3 \le 10,$

$3x_1 + 2x_2 + 4x_3 \le 15$ and $x_1, x_2, x_3 \ge 0$

OR

Solve the following L.P.P. by two-phase method **[10]**

Maximize $Z = 4x + 3y$ Subject to the constraints

$2x + 3y \le 6$

$3x + 1y \ge 3$ Both x and y all ≥ 0

Q2) a) Two manufacturers A and B are competing with each other in a restricted market. Over the year, A's customers have exhibited a high degree of loyalty as measured by the fact that customers are using A's product 80 per cent of the time. Also former customers purchasing the product from B have switched back to A's product 60 per cent of the time. **[7]**

i) Construct and interpret the state transition matrix in terms of (1) retention and loss, and (2) retention and gain

ii) Calculate the probability of a customer purchasing A's product at the end of the second period.

b) Explain the any one quantitative method that is useful for decision-making under uncertainty with example. **[3]**

OR

P.T.O.

a) A bakery keeps stock of a popular brand of cake. Previous experience shows the daily demand pattern for the item with associated probabilities, as given below: **[7]**

Daily demand (number)	:	0	10	20	30	40	50
Probability	:	0.01	0.20	0.15	0.50	0.12	0.02

Use the following sequence of random numbers to simulate the demand for next 10 days.

Random numbers : 25, 39, 65, 76, 12, 05, 73, 89, 19, 49.

Also estimate the daily average demand for the cakes on the basis of the simulated data.

b) Explain the following essential components of decision model : **[3]**

- Decision alternatives
- States of nature
- Payoff

Q3) a) A readymade garments manufacturer has to process 7 items through two stages of production, viz., cutting and sewing. The time taken for each of these items at the different stages are given below in appropriate units: **[7]**

Item	:	1	2	3	4	5	6	7
Process time Cutting	:	5	7	3	4	6	7	12
Sewing	:	2	6	7	5	9	5	8

Find an order in which these items are to be processed through these stages so as to minimize the total processing time.

b) ABC Corporation wants to launch one of its mega campaigns to promote a special product. The promotion budgets not yet finalized, but they know that some Rs. 55,00,000 is available for advertising and promotion. Management wants to know how much they should spend for television spots, which is the most appropriate medium for their product. They have created five 'T.V. campaign strategies' with their projected outcome in terms of increase in sales. Find which one they have to select to yield maximum utility. The data required is given below. **[3]**

Strategy	Cost in lakhs in Rs.	Increased in sales in lakhs of Rs.
A	1.80	1.78
B	2.00	2.02
C	2.25	2.42
D	2.75	2.68
E	3.20	3.24

OR

a) A machine operator has to perform three operations, namely plane turning, step turning and taper turning on a number of different jobs. The time required to perform these operations in minutes for each operating for each job is given in the matrix given below. Find the optimal sequence, which minimizes the time required. **[7]**

Job	Time for plane turning in minutes	Time for step turning in minutes	Time for taper turning in minutes
1	3	8	13
2	12	6	14
3	5	4	9
4	2	6	12
5	9	3	8
6	11	1	13

b) In a game of head and tail of coins the player A will get Rs. 4/- when a coin is tossed and head appears; and will lose Rs. 5/- each time when tail appears. Find the optimal strategy of the player. **[3]**

Q4) A small project is composed of 7 activities whose time estimates are listed below. Activities are being identified by their beginning (i) and ending (j) node numbers. **[10]**

Activities		Time in weeks		
i	j	t_0	t_1	t_p
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

a) Draw the network

b) Calculate the expected variances for each

c) Find the expected project completed time

d) Calculate the probability that the project will be completed at least 3 weeks than expected

e) If the project due date is 18 weeks, what is the probability of not meeting the due date

OR

The utility data for a network are given below. Determine the total, free, independent and interfering floats and identify the critical path. **[10]**

Activity :	0-1	1-2	1-3	2-4	2-5	3-4	3-6	4-7	5-7	6-7
Duration :	2	8	10	6	3	3	7	5	2	8

Q5) a) Solve the given game by method of matrices: **[7]**

		B		
		I	II	III
A	I	1	–1	–1
	II	–1	–1	3
	III	–1	2	–1

b) An investor is given the following investment alternatives and percentage rates of return. **[3]**

	States of Nature (Market Conditions)		
	Low	Medium	High
Regular shares	7%	10%	15%
Risky shares	–10%	12%	25%
Property	–12%	18%	30%

Over the past 300 days, 150 days have been medium market conditions and 60 days have had high market increases. On the basis of these data, state the optimum investment strategy for the investment.

OR

a) A company is currently involved in negotiations with its union on the upcoming wage contract. Positive signs in table represent wage increase while negative sign represents wage reduction. What are the optimal strategies for the company as well as the union? What is the game value? **[7]**

Conditional costs to the company (Rs. in lakhs)

		Union Strategies			
		U_1	U_2	U_3	U_4
Company Strategies	C_1	0.25	0.27	0.35	–0.02
	C_2	0.20	0.06	0.08	0.08
	C_3	0.14	0.12	0.05	0.03
	C_4	0.30	0.14	0.19	0.00

b) A manufacturer, manufactures a product, of which the principal ingredient is a chemical X. At the moment, the manufacturer spends Rs. 1,000 per year on supply of X, but there is a possibility that the price may soon increase to four times its present figure because of a worldwide shortage of the chemical. There is another chemical Y, which the manufacturer could use in conjunction with a third chemical Z, in order to give the same effect as chemical X. Chemicals Y and Z would together cost the manufacturer Rs. 3,000 per year, but their prices are unlikely to rise. What action should the manufacturer take using minimax criteria for decision-making? **[3]**

Total No. of Questions : 5]

SEAT No. :

PD1693

[Total No. of Pages : 3

[6432]-32

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

422 - BM 41 : PRINCIPLES AND PRACTICES OF MANAGEMENT & ORGANIZATIONAL BEHAVIOUR (PPM & OB)

(Revised 2020 Pattern) (Semester - IV)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Draw neat Diagram wherever necessary.***
2) ***All question carries equal marks.***

Q1) a) As a student coordinator, you have been asked to coordinate fresher's party for first year student. Specify different functions you will consider to manage & execute this party? **[5]**

b) Explain Taylor's Scientific Management Theory. **[5]**

OR

c) Specify need and scope of Management? Elaborate different Managerial levels used in organizations? **[5]**

d) Explain Fayol's theory of Administrative Management. **[5]**

Q2) Describe different Leadership Styles used in management? **[10]**

OR

Write Maslow's need Hierarchy theory and Herzberg's Hygiene Theory of motivations. **[10]**

Q3) Shivani, a senior software engineer at MTS, was leading a critical project to develop a new mobile application. The project had tight deadlines and demanding client expectations, putting immense pressure on Shivani and her team. Despite her experience, Shivani found herself overwhelmed by the workload and struggled to manage her stress levels.

As the project progressed, Shivani began noticing a decline in Omkar's performance, a junior developer on her team. Omkar, eager to prove himself, often worked late hours and took on additional tasks to meet deadlines. However, the mounting pressure took a toll on his productivity, and he started making mistakes, causing delays in project delivery.

P.T.O.

Shivani's attempts to address Omkar's performance issues were met with resistance, as he felt misunderstood and underappreciated.. Their disagreements escalated during a team meeting when Shivani expressed frustration over missed deadlines, leading to a heated argument between them.

Lisa, the HR manager at MTS, became aware of the conflict between Shivani and Omkar through employee feedback channels. Concerned about the impact of work stress on team dynamics and productivity, Lisa decided to intervene and address the issue proactively. **[10]**

- How can Sham, the project manager, effectively mediate the conflict between Shivani and Omkar to restore collaboration within the team and ensure the successful completion of the project?
- What strategies can Lisa implement to promote a healthy work environment and alleviate work stress among employees at MTS?

OR

Sanket, a dedicated team leader at GSI, was leading a cross-functional team to develop a new software application. The project was critical for the company's expansion plans, and the team faced tight deadlines and high expectations from stakeholders. As the project progressed, Sanket noticed signs of stress among team members, including Ram, a senior software engineer known for his expertise in coding.

Ram, although highly skilled, started exhibiting signs of burnout due to the demanding workload and pressure to deliver results. His productivity declined, and he became irritable and withdrawn, causing friction within the team. Sanket recognized the need for intervention and decided to address the issue proactively. Meanwhile, Maya, the HR manager at GSI, conducted regular stress management workshops and wellness programs to support employee well-being. However, despite these efforts, conflicts continued to arise within teams, affecting productivity and morale. As the situation escalated, Sanket sought assistance from Pooja, a conflict resolution specialist hired by GSI to facilitate communication and resolve conflicts within teams. Pooja conducted mediation sessions with Sanket and Ram, allowing them to express their concerns openly and explore solutions collaboratively.

Through mediation, Sanket and Ram identified underlying stressors and communication barriers contributing to their conflict. They agreed to implement strategies for effective stress management, such as setting realistic deadlines, promoting work-life balance, and improving communication channels within the team. **[10]**

- How can Maya, the HR manager, enhance the effectiveness of stress management initiatives at GSI to address the underlying causes of stress and promote employee well-being across departments?
- What role can Pooja, the conflict resolution specialist, play in fostering a culture of open communication and collaboration at GSI to prevent conflicts and promote a harmonious work environment?

Q4) How you can elaborate concept of Team? Which are the key benefits of working in a team? Also discuss different types of Teams? **[10]**

OR

Write note on **[10]**

a) Ego State

b) Johari window

Q5) a) As a project manager, you might be required to take different decisions. Please specify different decision taking environment in detail. **[5]**

b) Categorize common types of corporate cultures used in different organizations. **[5]**

OR

c) Suppose, in your organization you have been selected as team member for strategic decision purpose, please specify decision making processes with suitable example. **[5]**

d) Classify different organization structures used in different business organizations. With suitable example. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

PD-1682

[Total No. of Pages : 3

[6432]-11
M.C.A.
MANAGEMENT
IT21 : Phyton Programming
(2020 Revised) (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) ***Assume suitable data if necessary.***

Q1) a) Write a program to create the separate list of digits from the original list, which contains digits and alphabets using list comprehensions. **[5]**

Input list = ['a', 'b', 2, 43, 'Hi', 900, 'xyz'].

output list = [2, 43, 900]

b) What are the prime factors to consider when dividing a program into modules? **[5]**

OR

c) Explain Anonymous function with suitable example. **[5]**

d) Input Any Five integers (+ ve and – ve). Write a python code to find the sum of negative numbers, positive numbers and print them. **[5]**

Q2) a) What is multi threading? How to implement multithreading, give suitable example. **[5]**

b) Write user defined exception program which will find the factorial of a number if number is less than zero it should raise the exception as "invalid input" **[5]**

OR

c) Why do we use synchronization in thread? Justify Answer with suitable example. **[5]**

d) Create a program that opens a file named "output txt" for writing and prompts the user to enter a sentence write the sentence to the file and close it. **[5]**

P.T.O.

Q3) a) Write a program to validate ABC ID (Academic Bank of Credits) using regular Expression. **[5]**

b) Write a program to create a class called complex and implement _add_ ( ) method to add two Complex Numbers. **[5]**

OR

c) Write a program to validate PAN Card using regular expression. **[5]**

d) Explain static keyword in python how constructer can be used in inheritance. **[5]**

Q4) a) Write a python program using mongo DB database to create a collection "Store" with fields (s_ id, s_ brand name age_group, prize). **[5]**

Perform the following operations

i) Display all brands in "kids" group

ii) Update prize with new amount

b) What do you understand by mutability? Discuss with suitable example. **[5]**

OR

c) Write a program to demonstrate the scope of variables. **[5]**

d) Write a python program using mongoDB database to create a collection "Table Tennis Tournaments" with fields (Player-id, P_name, age, mobile_no) and display all players list. **[5]**

Q5) a) Create a series from numpy array and find max and mean of unique items of series. **[5]**

b) Create a pandas data frame using CSV file and perform a following. **[5]**

i) Display 5 first row.

ii) Display list of all columns.

OR

c) Draw line graph using matplot lib and decorate it by adding various elements use suitable data. **[5]**

d) Given a data frame df in pandas as below **[5]**

Id	First name	Last name	Age
01	Ravi	Sharma	25
02	Ajay	Varma	30
03	Vijay	kulkarni	26
04	Krish	Patil	22
05	Rahul	Raj	18

i) Compute mean of age.

ii) Display all column names.

iii) Compute maximum age of person.

Total No. of Questions : 5]

SEAT No. :

PD-1689

[Total No. of Pages : 2

[6432]-23
S.Y. M.C.A. (Management)
IT33 : SOFTWARE TESTING & QUALITY ASSURANCE
(Rev. 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 milk ordering mobile Application. The application functionalities are registration, login, check quantity, price, discount, delivery time etc. **[6]**

b) Design suitable test cases for above Application. **[4]**

OR

c) Write a detailed test plane for university result declaration system, which provides the facility to view students result (sem/year) wise, system should have facility to apply for rechecking/re-evaluation with payment. **[6]**

d) Design suitable test cases for above application. **[4]**

Q2) a) What do you mean by software Quality Assurance? **[5]**

b) Explain different types of Reviews. **[5]**

OR

c) Explain building blocks of SQA and SQA activities. **[10]**

Q3) a) Explain the software Testing Life cycle (STLC). **[5]**

b) What is Test Driven Development (TDD)? How to perform TDD. **[5]**

OR

c) Define software Reliability? Explain various reliability measurement factors. **[10]**

P.T.O.

Q4) a) What are the levels of testing? Explain in detail. **[5]**

b) Explain verification and validation in software Testing. **[5]**

OR

c) Explain different types of Computer aided software testing tools. **[5]**

d) Differentiate: **[5]**

i) White Box and Black Box Testing.

ii) Static and Dynamic Testing.

Q5) Write short notes (Any two) **[10]**

a) Selenium

b) Incident Management

c) Localization and Internationalization

d) Product Risk and Project Risk

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Total No. of Questions : 5]

SEAT No. :

PD-1683

[Total No. of Pages : 3

[6432]-12
M.C.A.
MANAGEMENT
IT22 : SOFTWARE PROJECT MANAGEMENT
(2020 Revised) (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) ***Basic calculator is allowed.***

Q1) a) UK based KPO company working on "Licence Management System". They are using number of expensive & licenced software tools. More than 5000 team members are sharing these tools. you have been deputed as project manager to ensure that a project finishes within original budged, with the required Scope of work & within the required timescales, and to ensure that throughout this process all the state holders, especially the client are satisfied with the project results. Prepare risk management process based on below points. **[6]**

i) Risk identification ii) Risk analysis iii) Risk mitigation

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

OR

c) A large construction company "PCL Developers" engaged in the real estate construction business decided to develop an ERP through Bistha Softech. The output of the system will be a cost sheet detailing the relevant information for contracting, budgeting, process monitoring and bill payment. Bistha softech team has no domain knowledge, as a project manager, you have been asked to suggest a risk management strategy after identifying the risks solve the case study. **[6]**

d) Explain Github. **[4]**

Q2) a) Explain sprint retrospective in detail. **[6]**

b) Write a short note on over view of project management framework. **[4]**

P.T.O.

OR

c) Consider project with following functional unit. **[6]**

i) Number of user inputs = 40

ii) Number of user outputs = 30

iii) Number of user enquiries = 25

iv) Number of user files = 04

v) Number of External interfaces = 04

In addition to above system requires

a) Significant data communication (4)

b) Performance is very critical (5)

c) Designed code may be moderately reusable (2)

d) System is not designed for multiple installation (0)

other complexity factors are treated as Average. Compute function point for project.

d) Short note on capability maturity model. **[4]**

Q3) a) A project of 200 KLOC is to be developed. software development team has average experience on similar type of projects. The project schedule is not very right. Calculate the effort, development time, average staff size of the project by using semi-detached mode of cocomo model. **[6]**

b) Explain Agile project management life cycle. **[4]**

OR

c) Scenario user wants to request cash from his/her account at any ATM

i) Write user story for the scenario above.

ii) Write an acceptance criterion for the user story in given/when/then format. **[6]**

d) Explain planning poker story point estimation technique. **[4]**

Q4) a) Explain the process to plan & execute iteration in agile with suitable example. **[6]**

b) Write short note on role of project manager. **[4]**

OR

c) Explain the roles of scrum master, product owner & development team. **[6]**

d) Short note on software configuration management. **[4]**

Q5) a) List out the 5 software project risks and explain the strategies for reducing these risks. **[6]**

b) Explain Agile manifesto & Agile principles. **[4]**

OR

c) Explain risk identification, analysis & mitigation in brief. **[6]**

d) Differentiate : Agile project management v/s Traditional project management. **[4]**