Total No. of Questions : 7]

SEAT No. :

P-5757

[Total No. of Pages : 2

[6120]-11

M.C.A.

IT-11 : PROBLEM SOLVING USING C++

(2019 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

Q1) a) Write an algorithm to print n prime numbers. **[5]**

b) Explain Divide and conquer algorithmic Paradignms. **[5]**

Q2) a) Write a C++ program to find the maximum from three given numbers using inline function. **[5]**

b) What is constructor overloading in C++. **[5]**

OR

a) Write a function to calculate m raise to n, if n is not given find square of m.

b) What is difference between call by address and call by reference?

Q3) a) Write a program to overload the operator + to add two time(hr,min,sec) and return a new time object. **[7]**

b) Write a program to find the length of given String. **[3]**

OR

a) Write a program to overload <and>.

b) Write a program to overload = = to compare string.

P.T.O.

Q4) a) Create class Television with data members and derive SmartTV from Television and add additional features and member functions. **[7]**

b) Explain compiling process in C++. **[3]**

OR

a) What is compile time polymorphism ? Explain how we can achieve it in C++ with example.

b) Explain structure of C++ program.

Q5) a) Write a program to use member dereferencing operator. **[7]**

b) Write a program to use switch case statement. **[3]**

OR

a) Explain setw,setfill and setbase manipulators in c++.

b) What is typecasting in c++.

Q6) a) What is const member function explain with example. **[7]**

b) What is scope resolution operator in C++. **[3]**

OR

a) Explain Local class with example.

b) Explain user defined data types.

Q7) a) Write a algorithm for tic-tac-toe. **[7]**

b) Write short note on continue and break. **[3]**

OR

a) Write an application for Tower of Hanoi.

b) Write a short note on memory identifier.

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Total No. of Questions : 7]

SEAT No. :

P5758

[Total No. of Pages : 1

[6120]-12
First Year M.C.A. (Management)
IT 12 : SOFTWARE ENGINEERING USING UML
(2019 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 & Q.7 are compulsory.***
2) ***Solve any four from remaining.***
3) ***Draw neat & labelled diagram wherever necessary.***

Q1) FoodEase is designed to provide a convenient and efficient platform for users to order food online from a variety of restaurants and have it delivered to their location or for pickup. Prepare the SRS for the above system in IEEE format. **[20]**

Q2) Construct a sequence diagram for reserving a hotel room online. **[10]**

Q3) Design a GUI screen for registering a grievance related to frequent electricity outage in your locality in the Grievance Redressal Portal provided by MSEB (assumption: the registered user has already logged into the portal) **[10]**

Q4) Describe SDLC in detail with a neat diagram. **[10]**

Q5) Develop an activity diagram to illustrate the online shopping experience, from browsing the web app to making a purchase. **[10]**

Q6) ConnectPlus is a dynamic social networking platform that empowers users to establish meaningful connections, share their thoughts and experiences through posts, engage with others by commenting, and take charge of their online presence through comprehensive profile mangement.
Draw Class diagram for the above app **[10]**

Q7) Write notes on: (Any Two) **[10]**

a) Scrum Role
b) Dynamic System Development Method
c) Role and Responsibilities of a System Analyst

Total No. of Questions : 7]

SEAT No. :

P-5759

[Total No. of Pages : 2

[6120]-13

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

IT-13 : DATABASE MANAGEMENT SYSTEM

(2019 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Questions no 1 is compulsory.***
2) ***Solve any 5 questions from remaining.***

Q1) An online bookstore wants to design a database to manage their inventory, orders and customers. Draw an Entity-Relationship Diagram (ERD) for the given scenario and normalize the database schema up to the 3NF. **[20]**

Q2) Explain various characteristics of DBMS. **[10]**

Q3) Explain the structure of XML data and its key components. How is XML different from other data formats like HTML? **[10]**

Q4) Consider the following schedule of transactions T1, T2, and T3 : **[10]**

T1 : R(A), W(A)

T2 : W(A), R(B)

T3 : W(B), R(A)

Determine whether the given schedule is serializable or not and if not, identify the conflicting operations.

P.T.O.

Q5) a) Explain Recovery with concurrent transactions.

b) Consider the following transactions. Give two non-serial schedules that are serializable.

T1	T2
Read (A)	Read (A)
A = A +	A = A – 1000
1000	Write (A) Read (B)
Write(A)	B = B – 1000
Read (C)	Write (B)
C = C – 1000	Read (B)
Write (C)	B=B+1000
	Write (B)

[10]

Q6) Explain the concept of log-based recovery in database systems giving suitable example. **[10]**

Q7) Write a short notes (any 2) : **[10]**

a) NoSQL database

b) Distributed Databases

c) ORDBMS

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Total No. of Questions : 7]

SEAT No. :

P5760

[Total No. of Pages : 2

[6120]-14

First year M.C.A. (Management)

IT - 14 : ESSENTIALS OF OPERATING SYSTEM

(2019 Pattern) (Semester - I)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q1 & Q7 are compulsory.***
2) ***Solve any four questions Q2 to Q6.***
3) ***Draw neat diagram whenever necessary.***

Q1) a) What is process? Explain any two sheduling techniques with example. **[10]**

b) Draw gantt chart. Calculate average waiting time and turn around time for FCFS sheduling. **[5]**

Process	Burst time	Arrival time
P1	7	0
P2	5	0
P3	8	0
P4	4	0

Q2) Explain any five linux commands with example. **[10]**

Q3) What is kernel? Explain importance of Kernel in operating system. **[10]**

P.T.O.

Q4) Explain mobile operating system with the help of suitable diagram. **[10]**

Q5) What is shell? Explain any four shell commands. **[10]**

Q6) Explain logical and physical memoy allocation. **[10]**

Q7) Write short notes (any 3). **[15]**

a) PCB

b) Distributed OS

c) Segmentation

d) Features of linux

Total No. of Questions : 8]

SEAT No. :

P-5761

[Total No. of Pages : 2

[6120]-15

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

BM-11 : BUSINESS PROCESS DOMAIN

(2019 Pattern) (Semester - I)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Q.1 and Q.8 is compulsory.***
2) ***Attempt any four from remaining.***
3) ***Use of calculator is allowed.***

Q1) Shivam Agrochemical Pvt. Ltd. is one of the growing agro-chemical manufacturing organizations situated at Pune. They want to open its branches all over India for providing better services to their customers. As a marketing manager you have been asked to -

a) Suggest different parameters to be considered before starting branch and marketing. **[10]**

b) Suggest your views to create different basis of market segmentation. **[10]**

Q2) a) Mr. Sharma's Basic Salary = Rs. 50,000. DA = 145%, He has completed 20 years of no. of service. Calculate eligible gratuity amount. **[5]**

b) Mr. A is getting basic pay = Rs. 40,000, DA = 140%, HRA = 20%, TA = Rs. 8,000, Per month deductions from his salary are PF = Rs. 1,380, LIC = Rs. 700, PT = Rs. 200, year of joining service 2015. Prepare a salary slip and calculate eligible gratuity amount. **[5]**

Q3) Discuss with suitable example different Business models of e-commerce. **[10]**

OR

Elaborate different Electronic Payment Systems used in modern business.

P.T.O.

Q4) a) What are the pros and cons of insourcing and outsourcing

b) Explain any one Inventory control technique.

[10]

OR

In SCM, Inventory management plays a vital role. Discuss your view also describe different modes of transportation.

Q5) What is CRM? Explain CRM Implementation strategies with suitable example. **[10]**

Q6) Shivraj Travels is one of the renowned Tour and Travels management company, wants to bind his customers for long term business gain. You have been asked to suggest CRM life cycle with reference to Shivraj Travels. **[10]**

Q7) What is LOANS? Discuss various types of loans. Also discuss Loan Sanction Process. **[10]**

OR

What is need of Insurance? Discuss different types of insurance. Also discuss Insurance process in short.

Q8) Write short note on any Two : **[2 × 5 = 10]**

a) Leave Types.

b) Operational and legal risk of e-payments.

c) Supply Chain Management.

d) Types of accounts.

Total No. of Questions : 7]

SEAT No. : ____

P-5762

[Total No. of Pages : 2

[6120]-21

M.C.A. (Management)

IT-21 : DATA STRUCTURES AND ALGORITHM

(2019 Pattern) (Semester - II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

Q1) a) Define Data Structure and explain the different types of data structures. **[5]**

b) Write an algorithm for addition of two Sparse Matrix. **[5]**

Q2) Convert Infix expression to postfix form. Show the contents of stack at each step. A$B*C – D + E/F/(G + H) **[10]**

OR

Write algorithm for Push, Pop and Display for stack implemented as array.

Q3) Write algorithm to reverse the contents of stack using Queue. **[10]**

OR

Write algorithm for insert, delete and display for Dequeue.

Q4) Write algorithm for insertion of a node in Single Linked List. **[10]**

OR

Write algorithm to sort a single Link List.

Q5) Draw a Binary Search Tree for 23, 89, 34, 67, 99, 2, 55, 45, 78, 12, 56. Write the Preorder, Inorder and Postorder traversal. **[10]**

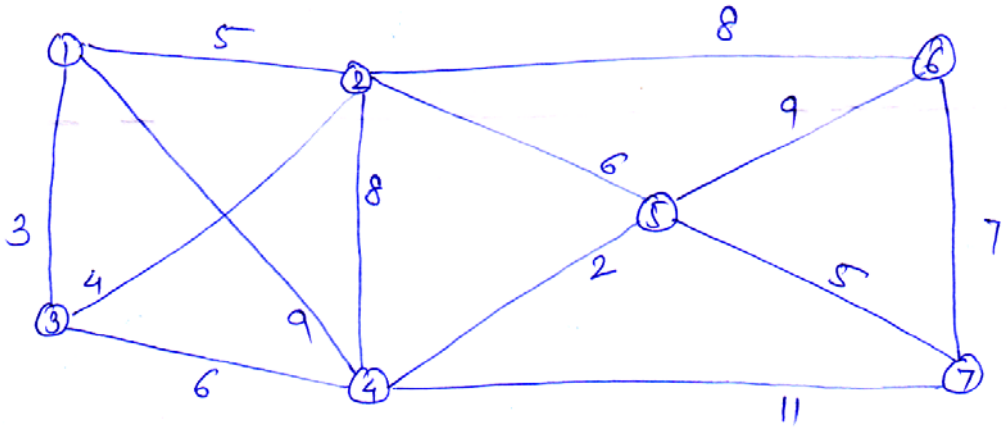
OR

Construct AVL tree for the following -

Nilu, Pranita, Princes, Raju, Joni, John, Akshay, Pavan, Oddy, Umesh.

P.T.O.

Q6) Apply Kruskal's algorithm and find MST for the following graph. **[10]**



OR

Write the non-recursive algorithm for BFS traversal of graph.

Q7) Write short Note on (any 2) : **[10]**

a) Graph Traversals

b) Merge Sort

c) Threaded Binary Tree

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Total No. of Questions : 7]

SEAT No. :

P5763

[Total No. of Pages : 1

[6120]-22
First Year M.C.A. (Management Faculty)
IT - 22 : WEB TECHNOLOGIES
(2019 Pattern) (Semester - II)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

Q1) Design HTML form for placement campus Drive. Assume suitable fields & validate any 5. **[10]**

Q2) How to use array in Javascript? Also explain types of array with suitable example. **[10]**

Q3) Write an external CSS for following properties and apply it on any HTML page. **[10]**

a) Image with 70% opacity and border 2px.
b) Hyperlink with red color & border color red.
c) Text with superscript and blue color.
d) Div with animation duration 4s & iteration count 3.
e) Paragraph with black color pink & text color red.

Q4) Write jQuery selectors with suitable example (any 10 selectors) **[10]**

Q5) Write PHP program to perform CRUD operations on Library issue / return books detail. (Assume suitable Fields) **[10]**

Q6) Explain web server Architecture with appropriate diagram. **[10]**

Q7) Write short notes on any two. **[10]**

a) Session & cookie
b) History & Navigation objects
c) jQuery effects

Total No. of Questions : 7]

SEAT No. : ____

P-8066

[Total No. of Pages : 2

[6120]-23

M.C.A. (Management)

IT - 23 : ESSENTIALS OF NETWORKING

(2019 Pattern) (Semester - II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Q.1 and Q.7 are compulsory.***
2) ***solve any four questions from Q.2 to Q.6.***
3) ***Figures to right indicate full marks.***
4) ***Draw neat diagrams wherever necessary.***

Q1) a) What is cryptography? Explain symmetric and asymmetric methods with an example. **[10]**

b) For the given class C, 192.168.191.1 and subnet mask 255.255.255.128. Calculate **[5]**

i) Total Number of Subnets

ii) Total Number of Host IP per subnet

iii) First and Last subnet address.

OR

b) Define the subnet mask to be used in Class B addressing to support 31 subnets and also find the number of hosts possible in each subnet. **[5]**

Q2) Compare OSI Vs TCP/IP models in detail. **[10]**

Q3) What is Domain Name Space? How IP address is recovered from domain name? Explain the process in detail. **[10]**

Q4) What is security threat? Explain different security attacks in detail. **[10]**

P.T.O.

Q5) What is the concepts of IP routing? Explain distance vector routing protocol. **[10]**

Q6) Generate CRC code for the data word 1011110001 using the divisor 11101.**[10]**

OR

Generate a Hamming code with binary value 11101101011 using an even parity. **[10]**

Q7) Write short notes (Any 3) **[15]**

a) Wireless LAN

b) Transmission Media

c) Framing

d) IPV6

e) IMAP

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Total No. of Questions : 5]

SEAT No. : ____

P5764

[Total No. of Pages : 4

[6120]-24

F.Y. M.C.A. (Management Faculty)
MT-21 : BUSINESS STATISTICS
(2019 Pattern) (Semester-II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Solve subquestions "a&b" or "c&d" from each question.***
3) ***Mention question and sub-question correctly.***
4) ***Use of simple calculator is allowed.***
5) ***Statistical table will be provided.***
6) ***Figures to the right indicate full marks.***

Q1) a) Discuss the importance of study of statistics. How it can help the extension of scientific knowledge to establishment of sound business social and political reform? **[7]**

b) Explain 't' distribution and uses of 't' test. **[7]**

OR

c) What is sampling? Describe briefly main types of sampling methods. **[7]**

d) What is standard deviation? Explain its important properties. How mean deviation differs from standard deviation? **[7]**

Q2) a) Calculate the median from the following data. **[7]**

Marks	0-10	10-30	30-60	60-80	80-90
No of students	5	15	30	8	2

b) Calculate standard deviation and coefficient of variation from the following data. **[7]**

Variables	10	20	30	40	50	60	70
Frequencies	6	8	16	15	32	11	12

OR

P.T.O.

c) From the data given below state which team is more variable Team A or Team B. **[7]**

Score	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Team A	9	17	32	33	40	10	9
Team B	10	20	30	25	43	15	7

d) A man travels from Jaipur to Agra by a Car and takes 4 hours to cover the whole distance. In the first hour he travels at a speed of 50 Km/hr, in the second hour his speed is 64 km/hr, in the third hour his speed is 80 km/hr and in the fourth hour he travels at the speed of 55 km/hr. Find the average speed of the motorist. **[7]**

Q3) a) Find the t-test value for the following two sets of values: **[7]**

Set-I-7, 2, 9, 8

Set-II- 1, 2, 3, 4

b) Is gender has anything to do with political party preference? You poll 440 voters in a simple random sample to find out which political party they prefer. The results of the survey are shown in the table below: **[7]**

	Republican	Democrat	Independent	Total
Male	100	70	30	200
Female	140	60	20	220
Total	240	130	50	440

OR

c) In the population, the average IQ is 100 with a standard deviation of 15. A team of scientists want to test a new medication to see if it has either a positive or negative effect on intelligence, or not effect at all. A sample of 30 participants who have taken the medication has a mean of 140. Did the medication affect intelligence? **[7]**

d) Can a dice be considered regular which is showing the following frequency distribution during 1000 throws? **[7]**

Thrown value	1	2	3	4	5	6
Frequency	182	154	162	175	151	176

Q4) a) Construct index numbers of the following data by Fisher's method. **[7]**

Commodity	Base year		Current year	
	Price	Value	Price	Value
A	3	18	7	10
B	5	35	10	100
C	6	42	11	55
D	4	32	6	60
E	8	24	9	36

b) Calculate the correlation Co-efficient of the given data. **[7]**

x	12	15	18	21	27
y	2	4	6	8	12

OR

c) Calculate Laspeyre's and Paasche's Price index number on the basis of the following data. **[7]**

Commodity	A	B	C	D	E
Base year Price	10	25	30	15	20
Current year Price	15	40	45	30	25
Base year quantity	6	10	15	20	8
Current year quantity	8	20	12	15	6

d) From the following data find the lines of regression **[7]**

i) Y on X

ii) X on Y

X	2	4	6	8	10
Y	6	5	4	3	2

Q5) a) Fit a straight line trend on the following data using the least squares method. **[7]**

Period year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Y	4	7	7	8	9	11	13	14	17

b) What is the need for studying time series? write a brief note on seasonal variations. **[7]**

OR

c) Calculate the 5 yearly moving averages of the number of students in a college from the following data: **[7]**

Year	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Number	332	317	357	392	402	405	510	427	405	438

d) Define following terms with illustration **[7]**

i) Level of significance.

ii) Degree of Freedom.

iii) Statistic and parameter.

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Total No. of Questions : 6]

SEAT No. :

P-5765

[Total No. of Pages : 2

[6120]-25

M.C.A. (Management)

BM-21 : PRINCIPLES AND PRACTICES OF MANAGEMENT AND ORGANIZATIONAL BEHAVIOR

(2019 Pattern) (Semester - II)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

Q1) Shabarimala of age 38, is co-founder of 7days, a management consultancy business. She earns Rs.20,00,000 a year and lives with her husband Venudharan, 42, who works part-time and their seven-month-old son Partha, in Bengaluru.

Shabarimala was having priorities like family's principal breadwinner; making sure her employees are paid; the constant pressure to win new business; and worrying about whether she spends enough time with her son. She thrives on the pressure of her job and because she feels largely in control of her life, says that her stress levels are manageable.

'Of course, I feel stressed because running your own business is a 24/7 commitment. It is very difficult to walk away and switch off or to wind down. Days passed and the stress levels kept on increasing.

After a couple of stressful week, one fine moming Shabarimala was not in a mood to get up and prepare herself anymore for the important meeting at her office due to uneasiness and headache and stressed mind. As a result of which the company was at a huge loss ultimately increased her stress levels.

'I know that, if the worst comes to the worst, we could sell the house, downsize and have an easier life'. Her husband said compassionately. But he also knew that was the way of life. If you have to help Shabarimala answer the following questions. **[10]**

a) Identify the stressors in the given case and discuss the type of stress.

b) Suggest suitable stress management strategies.

P.T.O.

Q2) Define Motivation. Explain any 2 theories of motivation. **[10]**

Q3) "A leadership style is the model of the behavior of an employer which can be observed in the processes of the control over his business and the attitude to his employees". Explain in detail. **[10]**

Q4) Define Group. Explain the Five-Stage Model of Group Development. **[10]**

Q5) What is a decision? What are different types of decision making environments? **[10]**

Q6) Write short notes on any 4 out of the given. **[20]**

a) Types of Managers

b) Management Science Approach

c) Types of corporate culture

d) Social responsibility of management

e) Organizational Structure

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Total No. of Questions : 7]

SEAT No. :

P5766

[Total No. of Pages : 2

[6120]-31

Second Year M.C.A. (Management)

IT31 : JAVA PROGRAMMING

(2019 Pattern) (Semester - III)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

Q1) Answer in short (Any five) : **[10]**

a) Memory management

b) Flavours of Java

c) Thread life cycle

d) Exceptions and errors

e) Use of 'Super'

f) Input/Output operation in Java

Q2) a) Write JDBC application to display department wise list of employees. Accept dno, dname from user assume suitable data. **[10]**

OR

b) Explain JDBC drivers with neat diagram. **[10]**

Q3) Explain Inter-Thread communication with suitable example. **[10]**

OR

Write a program to implement thread using runnable interface. **[10]**

P.T.O.

Q4) Validate the data by using servlet. **[10]**

Employee Info	
Emp.Id	
Emp. Name	
Contact	

Validation parameters.

a) All fields are compulsory.

b) Emp.Id & contact should be numeric.

c) Emp. Name should not contain special character.

OR

Explain architecture & challenges of web application. **[10]**

Q5) Explain event delegation model with diagram. **[10]**

OR

Explain different types layout managers in Java. **[10]**

Q6) Write a program to accept file name from use and display no. of word, characters and lines from that file. **[10]**

OR

Explain Array list collection framework with suitable example. **[10]**

Q7) Write short notes on (Any two) : **[10]**

a) Package in Java

b) Method overloading

c) Implementing interfaces

d) String functions

Total No. of Questions : 8]

SEAT No. : ____

P-5767

[Total No. of Pages : 2

[6120]-32

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

IT-32 : DATA WAREHOUSING AND DATA MINING

(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Q1 & Q8 are compulsory.***
2) ***Solve any five questions from Q2 to Q7.***
3) ***Figures to the right indicate full marks.***

Q1) What is data preprocessing and Explain various tasks involved in data preprocessing. **[10]**

Q2) What is linear Regression? Explain various applications of linear regression? **[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	{Milks, Bread, Coconut, Eggs, Biscuits}
T3	{Milk, Coconut, Eggs, Biscuits}
T4	{Milk, Eggs, Bread}

Q4) What is OLAP? What are different OLAP operations with example. **[10]**

P.T.O.

Q5) Discuss the K- nearest neighbor classification algorithm with suitable example. **[10]**

Q6) What is Bayesian Classification? Write an example and applications of it.**[10]**

Q7) Discuss the K- nearest neighbor classification algorithm with suitable example. **[10]**

Q8) Write short notes on (Any four) : **[20]**

a) ETL

b) KDD

c) Data visualization

d) Neural Network

e) Web Mining

f) Genetic algorithm

Total No. of Questions :8]

SEAT No. :

P5768

[Total No. of Pages : 1

[6120]-33

S.Y.M.C.A. (Management Faculty)
IT-33 : TESTING AND QUALITY ASSURANCE
(2019 Pattern) (Semester-III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Q.1 & Q. 8 are compulsory.***
2) ***Solve any five from remaining.***
3) ***Draw neat and labelled diagrams wherever necessary***

Q1) Write a test plan with scope and objectives of testing, risks, contingencies and strategy, schedule, deliverables for Know Edge, an online learning platform **[10]**

Q2) Elaborate on the structure (categories & factors) of McCall's classic factor model. **[10]**

Q3) Define Software Testing, Testing objectives and elaborate on the testing principles. **[10]**

Q4) What do you mean by review? Explain Inspection Process. **[10]**

Q5) Explain Bug Life Cycle with a neat diagram**.** **[10]**

Q6) Write four test cases for payment through a debit card option for an interactive web app, considering various positive and negative scenarios. **[10]**

Q7) Mention the factors to be considered in selecting a testing tool in an organisation. **[10]**

Q8) Write short notes (any Two) **[10]**

a) Boundary Value Analysis Technique with an example

b) Security Testing

c) Regression Testing

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Total No. of Questions : 8]

SEAT No. :

P-5769

[Total No. of Pages : 1

[6120]-34
M.C.A. (Management)
IT - 34 : CLOUD COMPUTING
(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Q.1 & Q.8 are compulsory.***
2) ***Solve (any 5) from Questions No. 2 to 7.***

Q1) Explain difference between Cloud Computing v/s Cluster Computing v/s Grid Computing. **[10]**

Q2) Explain types of Virtual Machine with examples. **[10]**

Q3) Explain security issues and challenges. **[10]**

Q4) Explain following types of Virtualization like server, storage and Network. **[10]**

Q5) Explain service Oriented Architecture and its benefits? **[10]**

Q6) Explain Data Migration and Quality of Services in Cloud Computing with examples. **[10]**

Q7) Explain characteristics of SaaS, PaaS and IaaS along with its benefits. **[10]**

Q8) Write short notes (Any - 2) **[10]**

a) SOAP
b) Service Level Agreement
c) Hypervisor

▽▽▽▽

Total No. of Questions : 8]

SEAT No. : ____

P-5770

[Total No. of Pages : 3

[6120]-35

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

MT-31 : PROBABILITY AND COMBINATORICES

(2019 Pattern) (Semester - III)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Question No. 1 and Question No. 8 are compulsory.***
2) ***Solve any four questions from Question No. 2 to Question No. 7.***
3) ***Figures to the right indicate maximum marks.***
4) ***Use of non-programmable calculator and statistical table is allowed.***

Q1) Solve any three questions out of 5 (5 Marks each) : **[3 × 5 = 15]**

a) What is the probability of getting 9 cards of the same suit in one hand at a game of bridge?

b) A statistical problem is given to the three students A, B and C, whose chances of solving are ½, ¾ and ¼ respectively. What is the probability that the problem will be solved if all of them try independently?

c) Let x be a random variable such that

$P(x = -2) = P(x = -1)$, $P(x = 2) = P(x = 1)$ and $P(x > 0) = P(x < 0) = P(x = 0)$ obtain the probability mass function of x and its distribution function.

d) A continuous random variable X has a p.d.f

$f(x) = 3x^2$, $0 \leq x < 1$.

Find 'a' and 'b' such that

i) $P(x \leq a) = P(x > a)$ and

ii) $P(x > b) = 0.05$

e) Let X be a random variable with the following distribution

x :	-3	6	9
$P(X = x)$:	$1/6$	$1/2$	$1/3$

Find $E(x)$ and $E(x^2)$ and also evaluate $E(2x + 1)^2$.

P.T.O.

Q2) a) Ten coins are thrown simultaneously. Find the probability of getting at least seven heads. **[5]**

b) In a book of 520 pages, 390 pages have typo graphical errors. Using Poisson distribution, find the probability that a random sample of 5 pages will contain no errors. **[5]**

Q3) a) If x is uniform distribution with mean 1 and variance $\frac{1}{3}$; find $P(x < 0)$ **[5]**

b) x is normally distributed and the mean of x is 12 and SD is 4. Find the following probabilities. **[5]**

i) $x \geq 20$

ii) $x \leq 20$ and

iii) $0 < x \leq 12$

Q4) a) If x has exponential distribution with mean 2. Find $P(x < 1 \mid x < 2)$. **[5]**

b) Obtain Poisson distribution a limiting condition of binomial distribution. **[5]**

Q5) a) In a sequence of Bernoulli's trials. Let X be the length of the run of either successes or failures starting with the first trial. Find $E(x)$ and $V(x)$. **[5]**

b) Give the following bivariate probability distributions; obtain (i) marginal distribution of x and y (ii) the conditional distribution of x given $x = 2$.**[5]**

y \ x	–1	0	1
0	1/15	2/15	1/15
1	3/15	2/15	1/15
2	2/15	1/15	2/15

Q6) a) What is the probability that four S's come consecutively in the word 'MISSISSIPPI'? **[5]**

b) Determine the coefficient of x^5 in the expansion $(2 - x + 3x^2)^6$. **[5]**

Q7) a) There are two bags A and B. A contains 'n' white and 2 black balls and B contains 2 white and 'n' block balls. One of the two bags is selected at random and two balls are drawn from it without replacement. If both the balls drawn are white and probability that the bag A was used to draw the balls is 6/7, find the value at *n*? **[5]**

b) Let *x* and *y* be jointly distributed with p.d.f. : **[5]**

$$f_{xy}(x,y)=\begin{cases}\frac{1}{4}(1+xy) & , |x|<1, |y|<1 \\ 0 & , \text{otherwise}\end{cases}$$

Show that x and y are not independent and x^2 and y^2 are independent.

Q8) Solve any three questions out of 5 (5 marks each) : **[3 × 5 = 15]**

a) A man is dealt 4 spade cards from an ordinary pack of 52 cards. If he is given three more cards, find the probability 'P' that at least one of the additional cards is also a spade.

b) The diameter of an electric cable, *x* is assumed to be continuous random variable with p.d.f : $f(x) = 6x(1 - x)$, $0 \leq x \leq 1$.

i) Check that f(x) is p.d.f. and

ii) Determine a number 'b' such that $P(x < b) = P(x > b)$.

c) Two dice (unbiased) are thrown. Find the expected values of the sum of numbers on them.

d) Let f(x, y) = 8xy, 0 < x < y < 1

= 0 elsewhere

Find

i) E (XY)

ii) V(Y)

e) Determine the binomial distribution for which the mean is 4 and variance 3. Find its mode.

Total No. of Questions : 8]

SEAT No. :

P-5772

[Total No. of Pages : 2

[6120]-41

M.C.A. (Management)

IT-41 : PYTHON PROGRAMMING

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Questions no 1 and 8 are compulsory.***
2) ***Solve any 5 questions from remaining.***
3) ***Figures to the right indicate full marks.***

Q1) a) What is dictionary? Explain python dictionaries in detail along with its operations and method. **[5]**

b) Explain looping statements in python with proper example. **[5]**

Q2) Write a multithreading program where one thread prints cube of number and other thread print square of number. **[10]**

Q3) a) What is constructors in python? Explain its type with suitable example. **[5]**

b) What is multilevel inheritance? Explain with example. **[5]**

Q4) a) Explain pattern matching in regular expression. **[5]**

b) Explain in details about namespace and scoping. **[5]**

Q5) a) Explain in details about python files and its type. **[5]**

b) Explain step by step process per Database connectivity in python. **[5]**

P.T.O.

Q6) a) What is numpy? Explain universal array function. **[5]**

b) Explain any three builtin exceptions. **[5]**

Q7) a) Do the following operations on dictionaries : **[5]**

i) Initialize two dictionaries with key & value pair.

ii) Find keys that are in first and not in second dictionary.

b) What is pandas? Explain series in pandas with example. **[5]**

Q8) Write short notes on (any two) : **[10]**

a) 'Static' keyword

b) Matplotlib

c) Modules

d) Lambda function

e) Destructor

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Total No. of Questions : 7]

SEAT No. :

P5773

[Total No. of Pages : 2

[6120]-42

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

IT42 : ESSENTIALS OF ARCHITECTURAL FRAMEWORK

(2019 Pattern) (Semester-IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates:

1) ***Q.1 & Q.7 are compulsory.***
2) ***Solve any four from remaining.***
3) ***Draw neat 4 labelled diagram wherever necessary.***

Q1) a) Explain architectural design and design Patterns. **[8]**

b) Explain Hotel industry architecture network. **[7]**

Q2) Explain the application platform and service management. **[10]**

Q3) How to implement architecture framework Roadmaps. **[10]**

Q4) What are quality attributes in software architecture? Demonstrate with suitable examples. **[10]**

Q5) What different frameworks are used for developing Andriod application developments. **[10]**

Q6) VISTA is a automobile industry which if recognised the need to enhance its software development process in order to a chieve customer driven quality and over all organization effectiveness. Deploy CMM to enhance the software development process align with customer needs and elaborate. level wise.**[10]**

P.T.O.

Q7) Write short notes on. (any three) **[3×5=15]**

a) The department of defense architecture frame work (DODAF)

b) ISO

c) Design for application security.

d) BAIN (Banking Industry Architecture Network)

e) Six sigma.

Total No. of Questions : 5]

SEAT No. :

P-5774

[Total No. of Pages : 2

[6120]-43

M.C.A. (Management)

IT 43 : Knowledge Representation & Artificial Intelligence

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

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

Q1) a) Define Production systems and its characteristics. **[10]**

b) What is propositional logic and predicate logic? Differentiate between them with suitable examples. **[10]**

Q2) What are the Properties of good knowledge-based system. **[10]**

OR

What are the role of Agents Explain the Architecture of Agents in AI?

Q3) Explain any two inference rules with suitable example. **[10]**

OR

Differentiate between Partial order planning, Hierarchical planning and Conditional Planning.

Q4) a) What are the different components of Expert System? **[10]**

OR

b) How does natural language processing work?

P.T.O.

Q5) Write a short notes (any four): **[20]**

a) Inductive Learning

b) Intelligent Agents

c) The Wumpus World

d) Bayes Theorem

e) State space search

Total No. of Questions : 8]

SEAT No. :

P-5775

[Total No. of Pages : 3

[6120]-44

M.C.A. (Management)

MT-41 : OPTIMIZATION TECHNIQUES

(2019 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question 1 is compulsory.***
2) ***Attempt any five from remaining.***
3) ***Figures on right side indicate full marks.***

Q1) a) A pharmaceutical company has four branches, one each at city A, B, C and D. A branch manager is to be appointed one at each city; out of four candidates P, Q, R and S. The monthly business depends upon the city and the effectiveness of the branch manager in that city. **[10]**

Branch Manager	City			
	A	B	C	D
	(Monthly business) ₹ lakhs			
P	11	11	9	9
Q	13	16	11	10
R	12	17	13	8
S	16	14	16	12

Which manager should be appointed at which city so as to get maximum total monthly business?

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

Maximize $Z = 100X_1 + 60X_2 + 40X_3$

Subject to constraint

$X_1 + X_2 + X_3 \leq 100$

$10X_1 + 4X_2 + 5X_3 \leq 600$

$2X_1 + 2X_2 + 6X_3 \leq 300$

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

P.T.O.

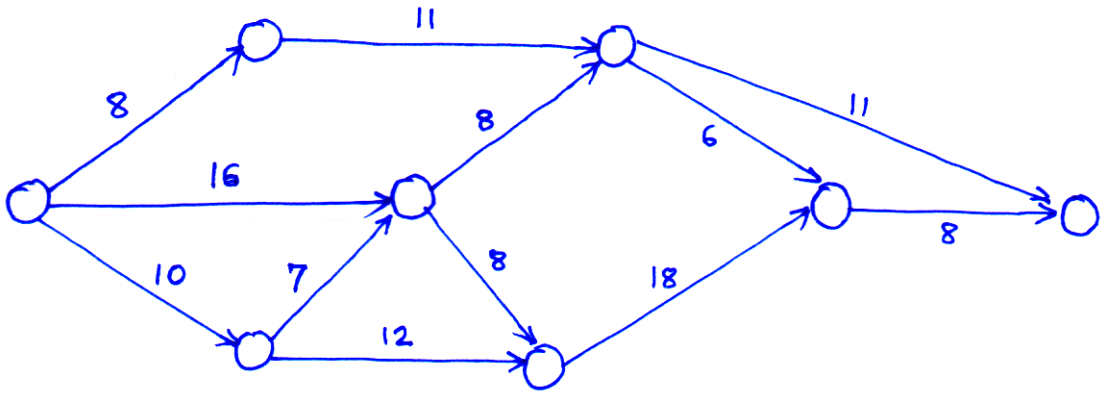
Q2) A manager must choose between two investments A & B which are calculated to yield net profit of ₹ 1200 & ₹ 1600 respectively. with probabilities subjectively estimated at 0.75 and 0.60. Assume the manager's utility function reveals that utilities for ₹ 1200 and ₹ 1600 amount are 40 and 45 units respectively, what is the best choice on the basis of expected utility value (EUV)? **[10]**

Q3) Solve the following 2 × 2 games without saddle point. **[10]**

Player B

$$\text{Player A} \quad \begin{matrix} & B_1 & B_2 \\ A_1 \\ A_2 \end{matrix} \begin{bmatrix} -4 & 6 \\ 2 & -3 \end{bmatrix}$$

Q4) Consider the network shown, the activity time in days are given along the arrows. Calculate the slacks for the events and determine the critical path. Put the calculation in tabular form. **[10]**



Q5) A firm is considering replacement of machine, whose cost price is ₹ 12200 and the scrap value ₹ 200. The running (maintenance & operating) cost are found from experience to be as follows. **[10]**

Years	1	2	3	4	5	6	7	8
Running cost (₹)	200	500	800	1200	1800	2500	3200	4000

When should the machine be replaced?

Q6) A self - service store employee one cashier at its counter. Nine customers arrive on an average every five minutes while the cashier can serve 10 customers in five minutes. Assuming poisson distribution for arrival rate and exponential distribution for service rate, find, **[10]**

a) Average number of customers in the system.

b) Average number of customers in queue or avg. queue length

c) Average time a customer spends in the system.

d) Average time a customer waits before being served.

Q7) Find the sequence that minimizes the total elapsed time (in hours) required to complete the following jobs on three machines, M_1, M_2 & M_3 in the order M_1, M_2 & M_3. **[10]**

		Job				
		A	B	C	D	E
Machines	M_1	4	9	8	6	5
	M_2	5	6	2	3	4
	M_3	8	10	6	7	11

Q8) Two persons X & Y work on a two - station assembly line. The distribution of activity time at their station are : **[10]**

Time in seconds	Time frequency for X	Time frequency for Y
10	3	2
20	7	3
30	10	6
40	15	8
50	35	12
60	18	9
70	8	7
80	4	3

a) Simulate operation of the line for eight items.

b) Assuming Y must wait until X completes the first item before starting work, will have to wait to process any of the other eight times?

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Total No. of Questions : 6]

SEAT No. :

P5771

[Total No. of Pages : 2

[6120]-45

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

BM41 : INFORMATION SYSTEM & SECURITY AUDIT

(2019 Pattern) (Semester - IV)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

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

Q1) IOT India Ltd. is a company providing customer an internet and data protection service. These main customers are some of the banks of India. Its employees, who have access to all financial accounts, credit card and debit card information of almost all of their banking clients. You have been deputed as information security administrator and have been allocated the duty to assessing the possible security breaches which may occur. **[10]**

a) What are the different types of vulnerabilities you might identify?

b) List threats you might identify from above case.

Q2) a) Explain information security life cycle. **[5]**

b) Write steps for developing ISMS. **[5]**

Q3) Agrotech Pvt. Ltd. decided to computerise their operations by using email and SMS plugging services for collaborating and communicating with farmers.You have been deputed by your software company as information security policy makes for this company. **[10]**

a) What security standards you will going to suggest for this case.

b) Which security policies you will design for this case.

P.T.O.

Q4) What is information security controls? Explain disaster recovery plan (DRP) **[10]**

Q5) a) Nagar Panchayat decided to implement online voting systems for elections of all wards (booths) coming under panchayat areas. You have been deputed as an IT auditor to identify the possible threats and input controls for such system. **[10]**

i) Which type of technology based audit you will conduct for this case.

ii) Explain IS audit process for this case.

b) Explain IT governance maturity model.

OR

a) Athlon corporation IS implementing CRM system for their day today operation of developing IC chips. You have been asked to conduct technology based audit and asked to do following types of testing. **[10]**

i) Write steps for penetration testing.

ii) Write vulnerability scanning process

b) Explain database security challenges. **[10]**

Q6) Write short notes on (Any two) : **[2×5=10]**

a) Ethical hacking

b) Types of Audit

c) ITIL

d) Needs of security audits in organisation

Total No. of Questions : 8]

SEAT No. :

P5777

[Total No. of Pages : 1

[6120]-51

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

IT-51 : SOCIAL MEDIA AND DIGITAL MARKETING

(2019 Pattern) (Semester - V)

Time : 3 Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Q.1 and Q.8 are compulsory.***
2) ***Solve any five from the remaining.***
3) ***Figurs to the right indicate full marks.***

Q1) FashionElegance.com is a leading online fashion retailer, offering a wide range of trendy clothing and accessories for men and women. Despite having a strong product selection, the company faced stiff competition and needed to enhance its digital marketing efforts to maintain a competitive edge. This case study explores how FashionElegance.com implemented various digital marketing strategies to drive brand awareness, increase website traffic, and boost sales. being a Digital Marketing Executive, how will you create and promote their Digital Marketing platform. **[10]**

Q2) Explain various tool of Social Media and Digital Marketing. **[10]**

Q3) Explain in details the type & roles of social media in marketing. **[10]**

Q4) What is Search Engine Optimization? Explain off page optimization concepts. **[10]**

Q5) Explain SWOT analysis of business. **[10]**

Q6) Explain the Tools used for Search Engine Marketing. **[10]**

Q7) Explain the new trends in Digital Marketing. **[10]**

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

a) Digital Marketing and Ecommerce
b) Facebook Marketing
c) PPC (Pay Per Click)

Total No. of Questions : 7]

SEAT No. :

P-5776

[Total No. of Page : 1

[6120]-52

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

IT-52 : MOBILE APPLICATION DEVELOPMENT

(2019 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question No. 1 and 7 are compulsory.***
2) ***Solve any four questions from 2 to 6.***
3) ***Figures to the right indicate full marks.***

Q1) Explain android architecture in detail. **[10]**

Q2) What is Layout? Explain various Layout with suitable example. **[10]**

Q3) What do you meant by adapter? Demonstrate Array Adapter using Listview to display list of five subjects. **[10]**

Q4) What is Cursor? Demonstrate a SQLite database application to insert a record in table. **[10]**

Q5) What is Flutter? Explain Architecture of Flutter. **[10]**

Q6) What is React Native? State the advantages of React Native. **[10]**

Q7) Write short note on following (Any four) : **[20]**

a) Dialogs

b) Fragment

c) JSON parsing

d) Firebase Database

e) Android Menu

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Total No. of Questions : 6]

SEAT No. : ____

P-5778

[Total No. of Pages : 2

[6120]-53

M.C.A. - III (Management Faculty)

IT 53 : SOFTWARE PROJECT MANAGEMENT

(2019 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Number showing on the eight side indicates full marks.***

Q1) Attempt the following (Any 4) : **[4 × 5 = 20]**

a) Explain 4 P's of project management.

b) What is rapid application development?

c) Explain Delphi estimation technique.

d) Short note on Scrum in Agile.

e) Explain 'Story point' in Agile.

f) What is test driven development?

Q2) a) Explain in brief steps in risk management process. **[5]**

b) Explain software project management life cycle in brief. **[5]**

OR

a) Discuss characteristics of good project.

b) Explain importance of risk management in the project management.

Q3) a) Explain advantages of SEI CMM model. **[5]**

b) What is function point analysis? Explain its components. **[5]**

OR

a) Write short note on - COCOMO model.

b) List features of MS-Project.

P.T.O.

Q4) a) List agile manifesto principles. **[5]**

b) Explain defect management process in brief. **[5]**

OR

a) Explain product roadmap.

b) Explain product backlog in brief.

Q5) a) Explain role of project manager. **[5]**

b) Discuss use of Burn down chart in Agile projects. **[5]**

OR

a) What is Sprint in Agile?

b) Explain Agile tool 'JIRA'.

Q6) Scenario - User wants to request cash from his/her account at any ATM.

a) Write a user story for the above Scenario. **[5]**

b) Write an acceptance criteria for the user story in Given/When/Then format. **[5]**

OR

a) Explain product backlog in Scrum.

b) Explain any two agile reports in brief.

▽▽▽▽

Total No. of Questions : 7]

SEAT No. :

P-9694

[Total No. of Page : 1

[6120]-61

M.C.A. (Management Faculty)

T1-IT51 : ASP .NET USING C#

(2015 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question No. 1 and 7 are compulsory.***
2) ***Solve any four questions from remaining.***
3) ***Figures to the right indicate full marks.***

Q1) Design a form and write a code for registration of a new employee and perform following task. **[15]**

a) Add new employee record
b) Update employee details
c) Display all employee details in Gridview control form DB.

Q2) Explain any five server controls with example & syntax. **[10]**

Q3) Write a code and steps to create and consume web services. **[10]**

Q4) Explain all login controls with example. **[10]**

Q5) Explain Asp .Net MVC architecture with example. **[10]**

Q6) What is exception? Explain page level & application level error in Exception Handling. **[10]**

Q7) Write a short note on following (Any three) : **[15]**

a) Windows Authentication
b) Deployment of web Applications
c) Debugging in ASP .Net.
d) Partial classes in C#

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Total No. of Questions : 7]

SEAT No. :

P-9695

[Total No. of Pages : 2

[6120]-62

T.Y. M.C.A. (Management Faculty)

T1-IT53 : BIG DATA ANALYTICS

(2015 Pattern) (Semester - V)

Time : 3 Hours] ***[Max. Marks : 70***

Instructions to the candidates :

1) ***Question No. 7 is compulsory.***
2) ***Answer any five questions from Q.1 to Q.6.***
3) ***Figures to the right indicate full marks.***

Q1) What are the challenges associated with Big Data in the enterprise? How do these challenges differ from traditional data management approaches? **[10]**

Q2) Explain the concept of Scale-Out Architecture and its advantages in handling large datasets. **[10]**

Q3) Explain the key components of Enterprise Data Platform Ecosystem. **[10]**

Q4) What is NoSQL? Compare ACID and BASE properties of NoSQL databases. **[10]**

Q5) Explain the process of building a production-ready Big Data Analytics system. **[10]**

Q6) Explain the core components of the Hadoop framework focusing on HDFS and Map Reduce. **[10]**

P.T.O.

Q7) Write short notes on (Any Four) : **[20]**

a) Cap theorem.

b) In-Memory database Grid.

c) Enterprise Information Management for Big Data

d) Characteristics of Database Workload

e) Sharding and Share Nothing

f) Big data warehouse

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Total No. of Questions : 5]

SEAT No. :

P5779

[Total No. of Pages : 2

[6120]-101

First Year M.C.A. (Management)

IT-11 : JAVA PROGRAMMING

(Rev. 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) What do you mean by anonymous class? Explain with suitable example. **[7]**

b) Explain the use of "this Keyword". **[3]**

OR

c) What is polymorphism? Explain the compiletime & runtime polymorphism. **[7]**

d) What is a naming conventions for packages? **[3]**

Q2) a) Explain un-checked exceptions with the suitable example. **[5]**

b) Define array, explain two-dimensional array with suitable example. **[5]**

OR

c) Explain thread priorites with proper example. **[5]**

d) What is mean of thread-deadlock? Illaborate it with suitable example. **[5]**

Q3) a) Define array list. Write a program to accept search element from the user to find it from given array list. **[6]**

b) What is the mean of hashing? Explain with suitable example for insert operation in Hash map. **[4]**

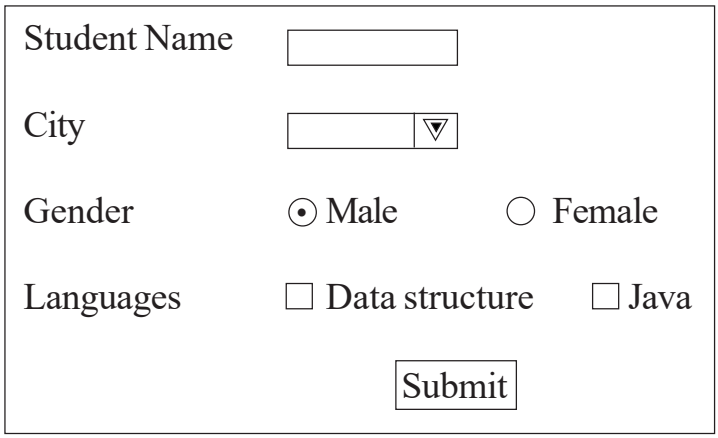
OR

c) Write a note on treeset & tree Map. **[6]**

d) Write a short on list interface. **[4]**

P.T.O.

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



OR

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

Q5) a) Create JDBC application for product table with fields Id, name & price perform insert operation & display inserted data retrieved from table to the user. **[10]**

OR

b) Create a web page by using servlet to find factorical of a given number. **[10]**

Total No. of Questions : 5]

SEAT No. :

P-5780

[Total No. of Pages : 3

[6120]-102

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) ***Figures to the right indicate full marks.***

Q1) a) Write an algorithm to reverse the nodes from singly linked list. **[6]**

b) Write an algorithm to copy elements from queue to stack. **[4]**

OR

a) Write an algorithm to calculate sum of data of alternate nodes of doubly linked list. **[6]**

b) Discuss the use of priority queue. **[4]**

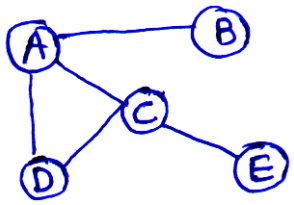
Q2) a) Construct binary search tree with following traversals. **[6]**

Preorder Traversal : 22, 15, 4, 17, 16, 19, 58, 82

Inorder Traversal : 4, 15, 16, 17, 19, 22, 58, 82

b) Write adjacency matrix and DFS for following graph.

[Starting vertex : A] **[4]**



OR

a) Construct segment tree (sum of range) for following data. **[6]**

14, 11, 12, 16, 17, 21, 28

b) Explain has collision with suitable example. **[4]**

P.T.O.

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

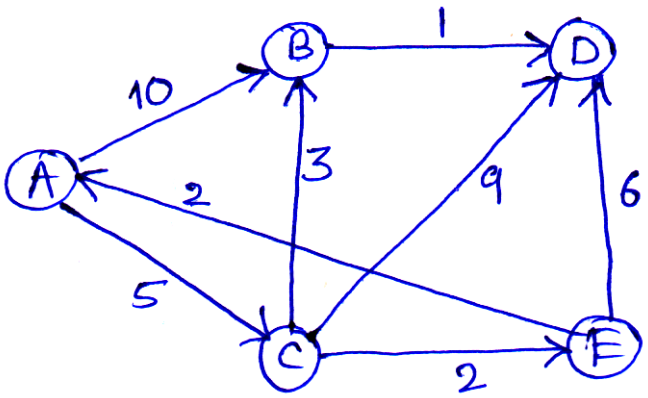
b) Describe the rules for solving N queen problem. **[4]**

OR

a) Apply the maximum subarray algorithm to the input : [–4, –7, –1, 4, 2, –3, 5] and find sum of maximum subarray. **[6]**

b) Explain combination sum problem with example. **[4]**

Q4) a) Apply Dijkstra's algorithm to find shortest path for following graph. **[6]**



b) Apply Euclidean algorithm to find GCD of 60 and 36. **[4]**

OR

a) Sort the following data using Mergesort algorithm [20, 55, 30, 4, 97, 13, 24]. **[6]**

b) Explain fast powering with suitable example. **[4]**

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

X = "congratulations" and Y = " gratitude"

b) How dynamic programming is used to find unique paths. **[3]**

OR

a) Consider the given instance of 0/1 Knapsack problem. **[7]**

n = 4, m = 8, p = (1, 2, 5, 6), w = (2, 3, 4, 5)

Using dynamic programming determine the optimal profit and the solution vector.

b) Explain regular expression matching using dynamic programming. **[3]**

Total No. of Questions : 5]

SEAT No. : ____

P5781

[Total No. of Pages : 2

[6120]-103

First Year M.C.A. (Management)

IT-13 : OBJECT ORIENTED SOFTWARE ENGINEERING

(2020 Pattern) (Semester-I)

Time : 2½Hours] ***[Max. Marks : 50***

Instructions to the candidates:

1) ***All question are compulsory.***
2) ***Draw neat diagrams wherever necessary.***
3) ***Figures to right indicate full makrs.***

Q1) a) Explain Rapid application development model. **[5]**

b) Describe feature Driven development in detail. **[5]**

OR

a) Explain spiral model. **[5]**

b) Describe web engineering process. **[5]**

Q2) a) Prepare SRS as per IEEE format for G20 Summit. management system. The overall functioning is as follows, **[10]**

i) G20 member registration.

ii) G20 member invitation.

ii) Schedule preparation

iv) Expenses tracking for G20 summit.

OR

b) Prepare SRS as per IEEE format for a renowned car showroom system for sales and service. **[10]**

Q3) a) Ministry of education is organizing smart India Hackthon for developing innovative culture in the Institute. Draw use-case diagram and class diagram for below tasks. **[10]**

i) Team registration

ii) Selecting problem statement

iii) Evaluating idea

iv) Nominating the team.

OR

b) Draw activity diagram and sequence diagram for registering a billing complaint to MSEB. **[10]**

P.T.O.

Q4) a) Design GUI form by using appropriate UI design elements for feedback form of one day Human rights workshop conducted in your Institute. **[5]**

b) Draw state transition diagram for an elevator. **[5]**

OR

a) Design GUI for households to request a new electricity connection. **[5]**

b) Draw collaboration diagram for agriculture farming system. **[5]**

Q5) Write short notes (any two) **[2 × 5 = 10]**

a) Inheritance and polymorphism.

c) Crystal.

d) Object diagram.

● ● ●

Total No. of Questions : 5]

SEAT No. : ____

P-5782

[Total No. of Pages : 2

[6120]-104

F.Y. 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 the diagram whenever necessary.***

Q1) a) What is CPU states? Explain different types CPU states. **[5]**

b) Explain physical and logical address space. **[5]**

OR

c) Explain Page Replacement algorithm in brief. **[5]**

d) What are semaphores? Explain types of semaphores. **[5]**

Q2) a) Explain distributed operating system. **[5]**

b) Explain different features of mobile operating system. **[5]**

OR

c) Explain No Remote Memory Access (NORMA). **[5]**

d) Explain installation steps in windows operating system. **[5]**

Q3) a) What is RTOS. Explain applications of RTOS. **[5]**

b) Explain Android operating system features. **[5]**

OR

c) Explain the features embeded operating system. **[5]**

P.T.O.

d) Explain below Linux command with example. **[5]**

i) Rmdir

ii) chmod

iii) man

iv) cat

v) ps

Q4) a) Write shell script to calculate simple interest. **[5]**

b) Explain the features of Linux operating system. **[5]**

OR

c) Write shell script to check the number is prime. **[5]**

d) Explain different control panel settings of windows operating sytems. **[5]**

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

a) Fragmentation

b) Process Hierarchies

c) Asymmetric Multi-processors

d) User Management in Ubuntu

Total No. of Questions : 5]

SEAT No. : ____

P-5783

[Total No. of Pages : 2

[6120]-105

M.C.A. (Management)

IT-15 : NETWORK TECHNOLOGIES

(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) a) Explain Guided transmission media in detail. **[4]**

b) Compare OSI model Vs TCP/IP model. **[6]**

OR

a) Explain Ethernet Frame Format & Access method. **[4]**

b) Explain Need of Layering with example. **[6]**

Q2) a) Draw and explain IPv6 packet format. **[4]**

b) Generate CRC code for the data word - 11001010 using the divisor - 10101. **[6]**

OR

a) For the given Class-C IP Address - 198.168.57.23 and subnet mask 255.255.255.192. Calculate **[4]**

i) Total no. of subnets

ii) Total no. of Host IPs/Subnet

iii) Total no. of Valid Host IPs/Subnet

iv) First and Last Valid IP for each subnet

b) Describe any two Error-detection techniques. **[6]**

P.T.O.

Q3) a) Find the maximum number of Hosts available on - Class-B IP address - with subnet mask 255.255.255.240. Also find maximum number of subnets available. **[4]**

b) Describe HDLC protocol with its sub types and frame format. **[6]**

OR

a) Explain performance of TCP protocol in wireless network. **[4]**

b) Detect and correct the single error in the received Hamming code word 110011100110 - with odd parity. **[6]**

Q4) a) Explain different security attacks. **[4]**

b) Explain MIME in detail. **[6]**

OR

a) Explain symmetric key cryptography with example. **[4]**

b) What is HTTP? Explain HTTP request and response messages in detail. **[6]**

Q5) a) Explain path vector protocol in brief. **[4]**

b) Write a TCP server socket program which accept a request from client to capitalize string and sending the response in the form of capitalized sentence back to the client. **[6]**

OR

a) Explain RIP in detail. **[4]**

b) Write Client and Server programs for establishing and termination of connection between client and server using TCP. **[6]**

Total No. of Questions : 5]

SEAT No. :

P5784

[Total No. of Pages : 2

[6120]-106

First Year M.C.A. (Management)

IT - 21 : PYTHON PROGRAMMING

(2020 Revised) (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.***
3) ***Assume suitable data if necessary.***

Q1) a) Write a program to create a list of words from the given string which are less than size 'A' .

Input String: "Python programming language has lot of applications in data analytics".

Input n = 8 **[5]**

b) Explain the concept of modules and packages with suitable example. **[5]**

OR

a) Explain generators with example. **[5]**

b) Write a program to swap two numbers without using temporary variable accept input from the user. **[5]**

Q2) a) What is thread? Write a program that creates two threads. One thread should print even numbers from 2 to 8 and the other should print odd numbers from 1 to 7. **[5]**

b) Write a program to accept an integer number and use try/except to catch the exception if a floating point number is entered. **[5]**

OR

a) What is thread synchronization? Explain with suitable example. **[5]**

b) Write a program that reads a text file and counts the number of lines and words in the file. **[5]**

P.T.O.

Q3) a) Write a program to validate strong password using regular expression - specify rules for the strong password. **[5]**

b) Create a class "Bank" having attributes "Bank name" "Branch", "City", "Manager Name" and methods" "Change manager name" and "Display details." Wirte a constructor to initialize the instance variables. Write a main program to demonstrate the use of Bank class. **[5]**

OR

a) Write a program to find the occurrence and position of the substrings within a string consider user input. **[5]**

b) Write a program to demonstrate the overriding of the base class method in the derived class. **[5]**

Q4) a) Write a program using mango DB database to create a "employee". Collection having fields Emp ID, Name, Designation, Mobile, Department. Accept the input from the user to insert the documents. **[5]**

b) What is string slice? How it is useful. **[5]**

OR

a) Explain deep copy with suitable example. **[5]**

b) Write a program using monogo DB database to create a collection "Chess competition" with fields (Player_id, player_name, player_age, player_phone) and display all registrations. **[5]**

Q5) a) Create pandas dataframe using 2D list and perform following operations. **[5]**

i) Display first 5 rows.

ii) Count missing values in column 2nd.

b) Create 3 × 3 numpy array and determine median and mode. **[5]**

OR

a) Create dataframe using three series having size 10. series are account number, name and balance. **[5]**

b) Draw pie chart using matplot lib and decorate it by adding various elements use suitable data. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

P-5785

[Total No. of Pages : 3

[6120]-107

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

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 diagram whenever necessary.***
3) ***Basic calculator is allowed.***

Q1) a) List out the five software projects risks & explain the strategies for reducing those risks. **[6]**

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

OR

a) A multinational company working on the shopping Applications. They are using number of expensive and licenced software tools. More than 5500 team members are sharing these tools. You have been deputed as project manager to ensure that a project finishes with in original budget, with the required scope of work & within the required time scales and to ensure that throughout this process all the stakeholders, especially the client, are satisfied with the project results.

Prepare the risk management process based on below points.

i) Risk Identification

ii) Risk Analysis

iii) Risk Mitigation

b) Explain Agile Tools.

P.T.O.

Q2) a) Demonstrate value driven development with suitable example. **[6]**

b) Explain release planning & iteration (Sprint) planning in brief. **[4]**

OR

a) Consider the project with following. Functional unit.

i) Number of User inputs = 50

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.

i) Significant data communication (4)

ii) Performance is very critical (5)

iii) Designed code may be moderately reusable (2)

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

Other complexity factors are Average compute function point for project.

b) Describe project and its characteristics.

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 effect, development time, average staff size of the project by using semi-detached mode of cocomo model. **[6]**

b) Explain the 4g's of project management. **[4]**

OR

a) 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 criteria for the user stay in Given/When/Then format.

b) Explain planning poker story point estimation technique.

Q4) a) Consider a project with following : **[6]**

Suppose that a project was estimated to be 400 KLOC. Calculate the effect and development time for all 3 mode i.e. organic, semidetached, and embedded.

Software Project	a_b	b_b	c_b	d_b
Organic	2.4	1.05	2.5	0.38
Semidetached	3	1.12	2.5	0.35
Embedded	3.6	1.2	2.5	0.32

b) Explain product Backlog and Sprint Backlog in brief. **[4]**

OR

a) Explain the four values of Agile Manifesto with it's meaning.

b) How to facilitate retrospective process in agile management with suitable example?

Q5) a) Avadhoot Developers which is the large construction organization in real estate construction business, decided to develop ERP through ACC software Ltd. The output of the system will be cost sheets detailing the relevant information for contracting, budgeting, progress monitoring & bill payment. ACC software Ltd. team has no domain knowledge and have less experienced staff members. You as a project manager have been asked to identify risk involved in it and propose solution to mitigate these risks. **[6]**

b) What are the components of function point analysis? **[4]**

OR

a) Explain the role of project manager and his responsibilities.

b) Write short note on github.

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Total No. of Questions : 5]

SEAT No. : ____

P5786

[Total No. of Pages : 2

[6120]-108

First. Year. M.C.A (Management faculty)
IT-23: ADVANCED INTERNET TECHNOLOGIES
(Rev. 2020) (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) a) Write a program using Canvas tag to draw different shapes (Circle, Triangle and Rectangle). **[5]**

b) Explain External CSS (CSS Properties: Font, Text, Color) with suitable example. **[5]**

OR

c) Explain any four pseudo classes in CSS with suitable example. **[5]**

d) Explain semantic elements in HTML5. **[5]**

Q2) a) Write a program to create a server in NodeJS and display server responses on a web page. **[5]**

b) What is NodeJS? Explain its working and features. **[5]**

OR

c) Explain any five modules of NodeJS. **[5]**

d) Write a program to show current date and time using user defined module in NodeJS. **[5]**

Q3) a) Explain date and time filter in Angular with suitable example. **[5]**

b) What is Routing in Angular? Explain with suitable example. **[5]**

OR

c) Explain dependency Injection in Angular with suitable example. **[5]**

d) Explain Typescript with suitable example. **[5]**

P.T.O.

Q4) a) What is cookie in PHP? Write a program to create a cookie and delete the Created cookie after 1 hr. **[5]**

b) Write a PHP code to create and print the values of multidimensional array. **[5]**

OR

c) Write a PHP script to display employees belongs to computer department and salary is in between 50000 to 90000 and store found records into the another table. (Assume suitable table structure) **[10]**

Q5) Write Short Note (Any two) **[10]**

a) Events in NodeJS

b) SPA in Angular

c) Super Global Variable in PHP

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Total No. of Questions : 5]

SEAT No. : ____

P-5787

[Total No. of Pages : 2

[6120]-109

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) ***Figure to the right indicate full marks.***

Q1) A university registrar's office maintains data about the following Entities : **[8]**

a) Course including number, title, credits, syllabus and prerequisites

b) Course offering includes course number, year, semester, section number, instructor, timing and classroom

c) Students including student-id, name and program and

d) Instructors including identification number, name, department and title. Further the enrollment of students in course and grades awarded to students in each course they are enrolled for must be appropriate modeled.

i) Draw the ER Diagram for above case study.

OR

ii) Design the normalized database upto 3NF for above case study.

Q2) a) What is data independence explain its two types. **[5]**

b) Write short notes on spatial Database. **[5]**

OR

a) Describe 3-tier schema architecture of data base. **[5]**

b) What is object oriented database? What are its fundamental features? **[5]**

P.T.O.

Q3) a) What are the various failure classification in detail? **[5]**

b) Explain different types of Access control in database security. **[5]**

OR

a) Write a short note on Data Encryption. **[5]**

b) Write a short note on Remote Backup System. **[5]**

Q4) a) Demonstrate with example 2PC protocol using growing and shrinking phase. **[6]**

b) How many types of mechanism work in NoSQL? Write down their names. **[2]**

OR

a) Check whether the given schedules in conflict serializable or not, if yes then determine all the possible serializable schedule.

S : W1(B), R2(A), W2(A), W2(B), R3(A), R3(B), R4(A) **[6]**

b) Write down the NoSQL's different features. **[2]**

Q5) a) List the parallel database architectures. Explain with diagram. **[7]**

b) Explain the any two concurrency control approaches in DDBMS in details. **[7]**

OR

a) Explain Inter operational and Intra operational parallelism in detail. **[7]**

b) Explain 2 phase and 3 phase commit protocol in DDBMS with proper example. **[7]**

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Total No. of Questions : 5] **SEAT No. :**

P8067 **[Total No. of Pages : 6**

[6120]-110
M.C.A. - I (Management)
MT - 21 : OPTIMIZATION TECHNIQUES
(Revised 2020) (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) Use the simplex method to solve the following LP problem **[10]**

Maximize $Z = 10x + 15y + 20z$ S.T

$10x + 5y + 2z \leq 2{,}700$

$5x + 10y + 4z \leq 2{,}200$

$1x + 1y + 2z \leq 500$ and All x, y and z are ≥ 0

OR

Use two-phase simplex method to solve the following LP problem: **[10]**

Minimize $Z = x_1 + x_2$ subject to the constraints

$2x_1 + x_2 \geq 4,$

$x_1 + 7x_2 \geq 7$ and $x_1, x_2 \geq 0$

Q2) a) The 'School of International Studies for Population' found out, through its survey, that the mobility of the population (in per cent) of a state to a village, town and city is in the following percentages. **[7]**

		To		
		Village	*Town*	*City*
From	*Village*	50	30	20
	Town	10	70	20
	City	10	40	50

What will be the proportion of population in village, town and city after two years, given that the present population has proportions of 0.7, 0.2 and 0.1 in the village, town and city, respectively?

P.T.O.

b) Consider a M/s XYZ company, which is developing its annual plans in terms of three objectives: **[3]**

i) Increased profits

ii) Increased market share and

iii) Increased sales. M/S XYZ has formulated three different strategies for achieving the stated objectives. The table below gives relative weightage of objectives and scores project the strategy. Find the optimal strategy that yields maximum weighted or composite utility.

Measure of → Performance of Three objectives	ROI (Profit)	%Increase (Market share)	%Increase (Sales growth)
Weights →	0.2	0.5	0.3
Strategy			
S_1	7	4	9
S_2	3	6	7
S_3	5	5	10

OR

a) A company manufactures around 200 mopeds. Depending upon the availability of raw materials and other conditions, the daily production has been varying from 196 mopeds to 204 mopeds, whose probability distribution is as given below: **[7]**

Production/day:	196	197	198	199	200	201	202	203	204
Probability:	0.05	0.09	0.12	0.14	0.20	0.15	0.11	0.08	0.06

The finished mopeds are transported in a specially designed three-storied lorry that can accommodate only 200 mopeds. Using the following 15 random

numbers: 82, 89, 78, 24, 53, 61, 18, 45, 23, 50, 77, 27,54

and 10, simulate the mopeds waiting in the factory?

i) What will be the average number of mopeds waiting in the factory?

ii) What will be the number of empty spaces in the lorry?

b) The following matrix gives the payoff of different strategies (alternatives) S1, S2, S3 against conditions (events) N1, N2, N3 and N4: **[3]**

	N_1	N_2	N_3	N_4
S_1	₹ 4,000	₹ –100	₹ 6,000	₹ 18,000
S_2	20,000	5,000	400	0
S_3	20,000	15,000	–2,000	1,000

Indicate the decision taken under the regret approach.

Q3) a) *There are seven jobs, each of which has to go through the machines A and B in the AB. Processing times in hours are given as* **[7]**

Job :	*1*	*2*	*3*	*4*	*5*	*6*	*7*
Machine A :	*3*	*12*	*15*	*6*	*10*	*11*	*9*
Machine B :	*8*	*10*	*10*	*6*	*12*	*1*	*3*

Determine a sequence of these jobs that will minimize the total elapsed time T. Also f and idle time for machines A and B.

b) A marketing manager of an insurance company has kept complete records of the sales effort of the sales personnel. These records contain data regarding the number of insurance policies sold and net revenues received by the company as a function of four different sales strategies. The manager has constructed the conditional payoff matrix given below, based on his records. (The state of nature refers to the number of policies sold). The number within the table represents utilities. Suppose you are a new salesperson and that you have access to the original records as well as the payoff matrix. Which strategy would you follow? **[3]**

State of nature	N_1	N_2	N_3
Probability	0.2	0.5	0.3
Strategy ↓	Utility	Utility	Utility
S_1(1call, 0 follow up)	4	6	10
S_2 (1 call, one follow up)	6	5	9
S_3 (1 call, two follow-ups)	2	10	8
S_4 (1 call, three follow-ups)	10	3	7

OR

a) A manufacturing company processes 6 different jobs on two machines A and B in the order AB. Number of units of each job and its processing times in minutes on A and B are given below. Find the optimal sequence and total elapsed time and idle time for each machine. **[7]**

Job Number	Number of unit ofeach job.	Machine A : time in minutes.	Machine B :time in minutes.
1	3	5	8
2	4	16	7
3	2	6	11
4	5	3	5
5	2	9	7.5
6	3	6	14

b) What are the components of the decision tree? **[3]**

Q4) A project consists of 9 activities and the three-time estimates are given below. Find the project completion time (TE). Draw the network for the given project and find the project completion time? **[10]**

Activities		Days		
i	j	T_O	T_L	T_P
10	20	5	12	17
10	30	8	10	13
10	40	9	11	12
20	30	5	8	9
20	50	9	11	13
40	60	14	18	22
30	70	21	25	30
60	70	8	13	17
60	80	14	17	21
70	80	6	9	12

OR

An insurance company has decided to modernize and refit one of its branch offices. Some of the existing office equipments will be disposed of but the remaining will be returned to the branch after the completion of the renovation work. Tenders are invited from a number of selected contractors. The contractors would be responsible for all the activities in connection with the renovation work excepting the prior removal of the old equipment and its subsequent replacement. The major elements of the project have been identified, as follows, along with their durations and immediately preceding elements.**[10]**

Activity	Description	Duration (weeks)	Immediate Predecessors
A	Design new premises	14	–
B	Obtain tenders from the contractors	4	A
C	Select the contractor	2	B
D	Arrange details with selected contractor	1	C
E	Decide which equipment is to be used	2	A
F	Arrange storage of equipment	3	E
G	Arrange disposal of other equipment	2	E
H	Order new equipment	4	E
I	Take delivery of new equipment	3	H, L
J	Renovations take place	12	K
K	Remove old equipment for storage or disposal	4	D, F, G
L	Cleaning after the contractor has finished	2	J
M	Return old equipment for storage	2	H, L

Draw the network diagram showing the interrelations between the various activities of the project. Find the effect on the overall duration of the project if the estimates or tenders can be obtained in two weeks from the contractors by reducing their numbers.

Q5) a) In a small town, there are only two stores, ABC and XYZ, that handle sundry goods. **[7]**

The total number of customers is equally divided between the two, because the price and the quality of goods sold are equal. Both stores have good reputation in the community, and they render equally good customer service. Assume that a gain of customers by ABC is a loss to XYZ and vice versa. Both stores plan to run annual pre-Diwali sales during the first week of November sales are advertised through a local

newspaper and through radio and televison. With the aid of an advertising firm store, ABC constructed the game matrix given below. (Figures in the matrix represent a gain or loss of customers).

	Strategy of XYZ		
Strategy of ABC	Newspaper	Radio	Television
Newspaper	30	40	–80
Radio	0	15	–20
Television	90	20	50

Determine the optimal strategies and the worth of such strategies for both ABC and XYZ.

b) A firm manufactures three types of products. The fixed and variable costs are given below: **[3]**

	Fixed Cost (Rs.)	Variable Cost per Unit (Rs.)
Product A :	25,000	12
Product B :	35,000	9
Product C :	53,000	7

The likely demand (units) of the products is given below:

Poor demand :	3,000
Moderate demand :	7,000
High demand :	11,000

If the sale price of each type of product is Rs. 25, then prepare the payoff matrix.

OR

a) Two competitors are competing for the market share of the similar product. The payoff matrix in terms of their advertising plan is shown below: **[7]**

	Competitor B		
Competitor A	No Advertising	Medium Advertising	Heavy Advertising
No Advertising	10	5	–2
Medium Advertising	13	12	13
Heavy Advertising	16	14	10

Suggest optimal strategies for the two firms and the net outcome thereof.

b) Explain three types of decision-making environments in brief . **[3]**

Total No. of Questions : 5]

SEAT No. :

P5788

[Total No. of Pages : 2

[6120]-111

M.C.A.-II

IT-31 : MOBILE APPLICATION DEVELOPMENT

(2020 Pattern) (Semester-III)

Time : 2½Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) a) Differentiate between Android and IOS architecture. **[10]**

OR

b) Explain android architecture in detail with the help of diagram. **[10]**

Q2) a) Create an android application to demonstrate Implicit Intent and Explicit Intent? **[10]**

OR

b) Create an android application to display list of items using list view. display message, when each list Item is selected. **[10]**

Q3) a) What is a Webview How to display any URL in a Webview. **[5]**

b) Write android code to turn ON/OFF Bluetooth. **[5]**

OR

c) Explain web service with suitable example. **[5]**

d) Explain different types of menus. Explain any one menu type with suitable example. **[5]**

Q4) a) Write Sqlite code to register for conference on different topics like [Artificial Intelligence, Data science, cloud computing, machine learning] Display the list of registered candidates. (Candidate could register for any one topic) **[10]**

OR

b) Write firebase code for taking appointment in hospital. Consider suitable details of patient. After successful registration patient will get appointment id. **[10]**

P.T.O.

Q5) a) Create react native app to display alert dialog box for SMS with button. **[5]**

b) Write a flutter application, to display a 'Hello world' message. **[5]**

OR

c) Write short notes on (any 2) **[10]**

i) Flutter architecture.

ii) Array adapter.

iii) React native.

● ● ●

Total No. of Questions : 5]

SEAT No. : ____

P-5789

[Total No. of Pages : 3

[6120]-112

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

IT-32 : DATA WAREHOUSING AND DATAMINING

(2020 Pattern) (Semester - III)

Time : 2½ Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) a) Describe different tools used for data warehouse development. **[5]**

b) Differentiate ER modelling Vs. Dimensional modelling. **[5]**

OR

c) What is OLAP? Explain different operations of OLAP. **[5]**

d) Discuss components of data warehouse architecture. **[5]**

Q2) a) What are the different cleaning tasks in ETL? **[5]**

b) Explain discretization & concept hierarchy generation steps in ETL. **[5]**

OR

c) Brief data integration & reduction methods in detail. **[5]**

d) Categorize ETL extraction methods. **[5]**

Q3) a) What is datamining? Discuss architecture of datamining with neat diagram. **[5]**

b) Define Text mining and discuss text mining process. **[5]**

OR

c) Write a short note on web context mining. **[5]**

d) Enlist the steps used is predictive modelling. **[5]**

P.T.O.

Q4) a) Consider following data set and find the frequent item sets with minimum support count 3 using FP. Tree algorithm. **[5]**

TID	Items
1	MONKEY
2	DONKEY
3	MAKE
4	COOKJE
5	CAKE
6	MUKCY

b) Consider the same data set in Q.4 a) and calculate support & confidence of following rules. **[5]**

i) $\{M, O\} \rightarrow \{Y\}$

ii) $\{K, E\} \rightarrow \{O, Y\}$

iii) $\{K, E\} \rightarrow \{M, O\}$

iv) $\{M\} \rightarrow \{K, E, Y\}$

v) $\{D\} \rightarrow \{O, N\}$

OR

c) Apply NB classifier on below dataset for the given instance. **[5]**

S.No.	Weather Condition	Vehical Condition	Traffic Problem	Accident
1	Rain	bad	high	yes
2	snow	average	normal	yes
3	clear	bad	light	no
4	clear	good	light	yes
5	snow	good	normal	no
6	rain	average	light	no
7	rain	good	normal	no
8	snow	bad	high	yes
9	clear	good	high	no
10	clear	bad	high	yes

Instance =

[Weather condition = “clear”, vehical condition = “bad”,

Traffic condition = “light”, Accident = ?]

d) Write the algorithm for decision tree. Generate a Decision tree for classification of loan approval or rejection. Consider the below attributes. 1) age, 2) Income group, 3) CIBIL Score **[5]**

Q5) a) Divide the data into high & low income group using k-mean clustering. **[5]**

D = (20k, 25k, 22k, 23k, 30k, 35k, 65k, 80k, 70k, 90k, 100k, 92k, 94k, 96k, 78k, 60k, 65k, 35k, 25k, 32k)

b) Write a note on Hierarchical clustering. **[5]**

OR

c) Given the dataset of age of people. Form K = 2. Clusters. **[5]**

D = (20, 25, 15, 35, 42, 41, 30, 56, 61, 62, 75, 80, 72, 75, 85, 55, 45, 43, 35, 78)

d) Explain metadata collection strategies. **[5]**

Total No. of Questions : 5]

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[6120]-113

S.Y. M.C.A. (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) ***Each question carry equal marks.***
3) ***Figures to the right indicate full marks.***

Q1) Write a detail test plan for online shopping on Amazon application. User can register through his/her valid email and mobile no. Application will provide the login credentials to user. User can select the items from list and add to cart. Finally user can check the cart and go for payment with different available options. Once the payment done user get the SMS regarding the successful order placed and same can be displayed on screen. **[10]**

OR

Write a detailed test cases for a multiplex theater who had designed its computerized system to handle four screens :

a) Tickets availability of movies running on different screens.

b) Ticket rates and available classes.

c) Online booking of tickets by customer through online payment using third party gateways like ICICI, HDFC and SBI etc.

Q2) a) Using Equivalence partitioning, write valid & invalid test case for an OTP number which contains only six digits, less or more than six digits will not be accepted. **[5]**

b) Explain different reliability models. **[5]**

OR

c) Explain different types of Computer Aided Software Testing Tools (CAST). **[5]**

d) Explain different types of reviews. **[5]**

P.T.O.

Q3) a) Define SQA. Explain building blocks of SQA. **[5]**

b) Explain Software Testing Life Cycle. **[5]**

OR

c) Define Verification & Validation. Explain V-model & W-model. **[5]**

d) Explain different levels of testing. **[5]**

Q4) a) What is Test Driven Development (TDD)? **[5]**

b) Explain non-functional testing types. **[5]**

OR

c) Write down the difference between data Flow analysis & control Flow analysis. **[5]**

d) Explain McCabe's Cyclomatic Complexity Metric. **[5]**

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

a) Incident Management

b) Defect life cycle

c) J Meter

d) Compare black box & white box testing

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Total No. of Questions : 5]

SEAT No. :

P5791

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[6120]-114

Second Year M.C.A. (Management)

IT - 34 : KNOWLEDGE REPRESENTATION & ARTIFICIAL INTELLIGENCE - ML, DL

(2020 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Use of scientific calculator is allowed.***
3) ***Figures on the right side indicate full marks.***

Q1) a) What is knowledge? Explain various types of knowledge with example. **[5]**

b) Explain of data essencials and its analysis in machine learning. **[5]**

OR

c) Explain the wumpus world problem to represent knowledge with its steps for reaching the target. **[5]**

d) Explain classification in machine learning. Also explain difference between regression and classification in brief. **[5]**

Q2) a) Consider the argument **[6]**
"All dogs bark.
Some animals are dogs.
Therefore some animals bark
Determine whether the conclusion is valid arguments or not.

b) Construct the truth - table for the following. **[4]**
i) $(p \wedge q) \wedge \neg(p \vee q)$
ii) $(p \wedge q) \rightarrow p$

OR

c) Translate following sentences in FOL. **[6]**
i) All men are people
ii) John buys a pumpkin
iii) No boys get any doll
iv) Some students win match
v) Ravi eats everything thay ajay eats
vi) It is a warm day

d) Explain rule of inferences. **[4]**

P.T.O.

Q3) a) Perform k-means clustering and show all the calculations at each iteration, to form the final cluster. Assume the initial clusters are A, E & H. **[6]**

Points	A	B	C	D	E	F	G	H	I	J
x1	3	8	4	2	7	5	3	4	6	9
x2	3	5	4	4	7	8	5	8	9	6

b) Explain Naive Bayes classification. **[4]**

OR

c) Calculate the regression equation of x on y from the data given below. **[6]**

Price	10	12	13	12	16	15
Amount demanded	40	38	43	45	37	43

estimat the likely demand when price in Rs. 20.

d) Explain the following terms with reference to creating maching learning models. **[4]**

i) Training dataset

ii) Testing dataset

Q4) a) Consider the following data set **[6]**

f_1	f_2	y
–1	–1	–1
0	1	+1
1	0	+1
1	1	+1

If perception along with is applied so that data set with the weight vector initialize to [0, 0]. How many times the weight vector will be updated during the training process.

b) Explain ReLU function in detail. **[4]**

OR

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

3	1	2	2
9	4	6	1
8	5	2	4
3	1	2	6

i) Find 1 > maxpool with 2×2 Filter and stride 2.

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

Q5) a) Explain the working of convolutional Neural networks with a neat diagram. **[5]**

b) Explain CPU in detail. **[5]**

OR

c) Explain generative adversarial network C(GAN) **[5]**

d) Explain chatbot in detail. **[5]**

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Total No. of Questions : 5]

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P8068

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[6120]-115
M.C.A. - II (Management)
IT - 35 : CLOUD COMPUTING
(Revised) (2020 Pattern) (Semester - III)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat diagrams where necessary.***
3) ***Give proper assumptions.***
4) ***Figures to the right indicate full marks.***

Q1) a) Explain the characteristics of cloud service models. **[5]**

b) Differentiate between cloud computing and Grid computing. **[5]**

OR

a) Explain various cloud deployment models. **[5]**

b) Differentiate between cloud computing and cluster computing. **[5]**

Q2) a) What is hypervisor? Explain Type 1 hypervisor. **[4]**

b) What is virtualization? Explain the characteristics of virtualization. **[4]**

OR

a) Explain Xen Para Virtualization. **[4]**

b) List out the pros and cons of virtualization. **[4]**

Q3) a) Explain the different components of web services? **[4]**

b) What is SOA? Explain the advantages of SOA. **[4]**

OR

a) Explain the concept of cloud Bursting. **[4]**

b) What is SLA in cloud computing. **[4]**

P.T.O.

Q4) Analyze that Edge computing is more beneficial than any cloud computing system. Justify with a suitable example. **[8]**

OR

Suggest the cloud computing architecture for Pharma Industry with proper Justification. **[8]**

Q5) a) Analyze the data migration process, suggest the various Issues in Inter cloud computing with cloud migration process. **[8]**

b) Suggest the Security and Privacy mechanism for designing an effective cloud environment for retail Industry. **[8]**

OR

a) Apply cloud concept for hotel Industry. Define the cloud architecture with level of services. **[8]**

b) An IT company decides to provide free access to a public cloud dedicated to higher education. Which cloud delivery model is suitable and why?**[8]**

Total No. of Questions : 5] **SEAT No. :**

P5792 **[Total No. of Pages : 2**

[6120]-116
Second Year M.C.A. (Management)
421 - IT - 41 : DEVOPS
(Revised 2020) (Semester - IV)

Time : 2½ Hours] ***[Max. Marks : 50***

Instructions to the candidates:

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

Q1) a) Explain in detail Devops life cycle with diagram. **[5]**

b) Explain git repository with examples. **[5]**

OR

c) Explain any 5 linux commands with proper syntax and suitable example. **[5]**

d) Difference between CVCS and DVCS. **[5]**

Q2) a) How to set up chef workstation, chef server, Nodes, Chef client? Explain it. **[10]**

OR

b) Explain Maven local and gobal repositories in details with steps. **[10]**

Q3) a) Explain Docker components with suitable documents. **[5]**

b) Explain types of handlers in chef. **[5]**

OR

c) What is docker hub? Explain running multiple containers with suitable examples. **[5]**

d) Write all the steps Installing Docker on Linux. **[5]**

P.T.O.

Q4) a) Explain maven build life cycle with suitable diagram. **[5]**

b) Explain git essentials in detail. **[5]**

OR

c) How to create maven local and global repository? **[5]**

d) Explain Accessing Containers, and linkling containers. **[5]**

Q5) Write short notes: (Any Two) **[10]**

a) SDLC Model

b) Branching in git

c) Chef environment

OR

d) AWSECS **[10]**

e) Maven global repository

f) Creating branch in Git.

Total No. of Questions : 5]

SEAT No. :

P-5793

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[6120]-117

M.C.A. - II

422-BM 41 : Principles and Practices of Management and Organizational Behavior

(2020 Pattern) (Semester - IV)

Time : 2½ Hours] ***[Max. Marks : 60***

Instructions to the candidates :

1) ***Draw net Diagram wherever necessary.***
2) ***All Question carries equal marks.***

Q1) Smith Electronics Corporation is a global electronics manufacturing company. The company is organized into three distinct managerial levels: top-level management, middle-level management and front-line management. Each level plays a crucial role in the company's operations and decision-making processes. According to your viewpoint discuss role and responsibility of each level of management in this organization. **[10]**

OR

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

Q2) a) Explain the various levels of organizational culture in detail. **[5]**

b) Compare Scientific Management by Taylor and Administrative Management by Fayol. **[5]**

OR

a) What is Decision making explain various types of decision making.

b) What is Social Responsibility of Management?

Q3) Assume that you are farmer and cultivating grapes discuss decision making under certainty, under uncertainty and under risk by considering the market, natural disaster. **[10]**

OR

How Theory X is applied by the managers to the employees during completion of particular task analyse it.

P.T.O.

Q4) a) What are Leadership Styles discuss it in detail? **[5]**

b) Being a successful person how you can apply Maslow's need Hierarchy in your life discuss it in detail. **[5]**

OR

a) What is Herzberg's Motivation- Hygiene Theory?

b) What is Conflict management? Explain the five stages of conflict management.

Q5) What is Stress Management? Justify How Meditation and Exercise is useful for stress management. **[10]**

OR

Ms. Smita got a job in a multinational 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.

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