Total No. of Questions : 7] **SEAT No. :**

PB-844

[Total No. of Pages : 2

[6204]-101
M.C.A. (Management Faculty)
IT-11: Problem Solving using C++
(Semester-I) (2019 Pattern)

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

Instructions to the candidate:

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

Q1) a) Write a pseudo code for Fibonacci series using dynamic programming approach **[5]**

b) Explain divide and conquer algorithmic paradigm. **[5]**

Q2) a) Explain function with const arguments with example. **[5]**

b) Write a program to swap two numbers using call by address. **[5]**

OR

Q2) a) What is friend function explain with example. **[5]**

b) Write a program to demonstrate return by reference. **[5]**

Q3) a) Write a program of overload + operator to add two 3×3 matrix. **[7]**

b) What are the rules for overloading operators in C++ **[3]**

OR

Q3) a) Define class string and overload <and + for comparing and concatenating of two string objects **[7]**

b) Which operators are not overloaded in C++ using friend function **[3]**

P.T.O.

Q4) a) Explain multiple inheritance with example **[7]**

b) What is structure in C++. **[3]**

OR

Q4) a) Explain abstract class with example **[7]**

b) Explain Class in C++. **[3]**

Q5) a) Explain nested classes with example **[7]**

b) Explain logical Operators in C++. **[3]**

OR

Q5) a) What is user defined datatype **[7]**

b) What is type casting in C++. **[3]**

Q6) a) Explain parameterized constructor in C++. **[7]**

b) Explain new operator **[3]**

OR

Q6) a) What is friend function ? explain with example **[7]**

b) Explain use of break and continue statement **[3]**

Q7) a) Write program for Tic Tac Toe **[7]**

b) What are binary operators in C++ **[3]**

OR

Q7) a) Write a program for Mouse in Maze problem. **[7]**

b) What are unary operators in C++. **[3]**

Total No. of Questions : 7]

SEAT No. :

PB845

[Total No. of Pages : 2

[6204]-102
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) SalonConnect is designed to provide a streamlined and convenient platform for users to schedule appointments, book a variety of salon services, and make online payments for the services rendered.

Prepare the SRS for the above system in IEEE format. **[20]**

Q2) Construct a sequence diagram for a library's book borrowing process. **[10]**

Q3) Design a GUI screen for registering for a cultural fest individual dance competition organised by the university. **[10]**

Q4) Describe Waterfall model with a neat diagram. **[10]**

Q5) Develop an activity diagram for booking a doctor's appointment through an online platform, including activities like selecting a doctor, choosing an appointment time, and confirming the booking. **[10]**

P.T.O.

Q6) An advanced online learning platform offers a comprehensive set of features,including the seamless process of course enrolment, intuitive lesson viewing, and effective assessment tools, empowering learners to achieve their educational goals at a nominal cost.

Draw Class diagram for the above app. **[10]**

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

a) Extreme Programming.

b) Any five Agile principles.

c) Role of a System Analyst.

Total No. of Questions : 7]

SEAT No. :

PB846

[Total No. of Pages : 2

[6204]-103

First Year M.C.A. (Management)

IT 13 : DATABASE MANAGEMENT SYSTEM

(2019 Pattern) (Semester - I)

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

Instructions to the candidates:

1) ***Question No. 1 is compulsory.***
2) ***Solve any 5 questions from remaining.***

Q1) A database is to be designed for a college to monitor students progress throughout their Course of study. The students are reading for a degree (Such as MBA, MCA MPM, etc.) within the framework of the modular system. The college provides a number of module, each being characterized by its Code, title, and Credit value, module leader, teaching staff and the department they come from. A module is coordinated by a module leader who shares teaching duties with one or more lecturers. A lecturer may teach (and be a module leader for) more than one module. Students are free to choose any module they wish but the following rules must be observed some modules require pre-requisites modules and some degree programs have compulsory modules. The database is also to contain some information about students including their numbers, names, addresses, degrees they read for and their past performance (i.e., modules taken and examination results). Construct the ERD and normalize the database upto 3 NF. **[20]**

Q2) What is DBMS? Explain 3-tier architecture of DBMS. **[10]**

Q3) Differentiate between OODBMS and ORDBMS. **[10]**

P.T.O.

Q4) Consider the following two transactions and schedule (time goes from top to bottom). **[10]**

a) Is this schedule conflict - serializable? Explain why or why not.

To	T1
R(A)	
W(A)	
	R(A)
	R(B)
	Commit
R(B)	
W(B)	
Commit	

b) Show how 2PL can ensure a conflict-serializable schedule for the same transactions above.

Q5) a) How Serilizability can be achieved?

b) Explain Recovery with concurrent transactions. **[10]**

Q6) Explain recovery from catastrophic failure. **[10]**

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

a) Cloud databases

b) XML Applications

c) Types of NoSQL database



Total No. of Questions : 7]

SEAT No. :

PB847

[Total No. of Pages : 2

[6204]-104

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 from Q2 to Q6.***
3) ***Draw neat diagram wherever necessary.***

Q1) a) What is a process? Explain process control block (PCB) with diagram. **[10]**

b) Consider the following set of processes. Draw Gantt chart. Calculate average waiting time & turnaround time by shortest Job First (SJF) preemptive scheduling algorithm. **[5]**

Process	Burst time	Arrival time
P_1	8	0
P_2	4	1
P_3	9	2
P_4	5	3

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

Q3) What is shell? Explain any 2 shell utilities. **[10]**

Q4) Explain Mobile operating system with the help of MOS architecture. **[10]**

P.T.O.

Q5) Explain problems in concurrent process - critical section & mutual exclusion. **[10]**

Q6) Explain file structure & file permission in Linux with suitable example. **[10]**

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

a) Functions of operating system.

b) Distributed operating system.

c) paging vs segmentation.

d) Kernel.

x x x

Total No. of Questions : 8]

SEAT No. : ____

PB848

[Total No. of Pages : 2

[6204]-105

First Year 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 simple calculator is allowed.***

Q1) Shivani Milk and Milk Products Pvt. Ltd is one of the growing Milk based manufacturing organizations situated at Pune. They want to transport Milk and Milk based product throughout the India to their wholesalers. As a manager you have been asked to-

a) Suggest different modes of transportation to be considered. **[10]**

b) Suggest CRM system suitable for Transport Management System. **[10]**

Q2) a) Mr. Sharma's Basic salary = Rs. 40,000. DA=115%, He has completed 26 years of no. of service. Calculate eligible gratuity amount for him.**[5]**

b) Mr. A is getting basic pay= Rs. 50,000, DA=110%, HRA=20%, Rs. TA=8000. Per month deductions from his salary are PF=Rs. 1380, LIC=Rs. 700, PT=Rs. 200, Joining year of service is 2015. Prepare a salary slip and calculate eligible Gratuity amount. **[5]**

Q3) Elaborate different Business models of ecommerce to be consider for business. **[10]**

OR

Elaborate different Electronic payment systems used in modern businesses. **[10]**

P.T.O.

Q4) What are different types of Leaves the business organization can sanction? **[10]**

OR

Which are different types of Inventory control technique? Explain any one in brief. **[10]**

Q5) To start any business you should know different types of accounts. Please summarize different types of account. **[10]**

Q6) Shivrajbaba Chain of Hotels is one of the renowned Hotel Services Company, wants to bind his customers for long term business gain. You have been asked to suggest CRM life cycle with reference to Shivrajbaba Chain of Hotels. **[10]**

Q7) Nitesh want to apply for Loan to start his business. As an advisor suggest various types of loans. Also discuss Loan Sanction Process. **[10]**

OR

Discuss different types of insurance. Also discuss Insurance processes in short. **[10]**

Q8) Write short note on any two. **[2×5=10]**

a) Insourcing and outsourcing

b) Operational and legal risks of e-payments

c) Supply Chain Management



Total No. of Questions : 7]

SEAT No. :

[Total No. of Pages : 2

PB-849

[6204]-201
M.C.A. (Management)
IT - 21 : DATA STRUCTURE 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) Write an algorithm for bubble sort. Apply bubble sort and show all steps to sort the following : **[10]**

81, 56, 43, 27, 59, 68, 37, 90, 19

Q2) Evaluate the following postfix expression : **[10]**

AB + CD / * EF * + where A = 5, B = 3, C = 6, D = 2, E = 3, F = 5. Show contents of stack at each step in tabular form.

OR

Define stack, Explain operations of stack. **[10]**

Q3) Write an algorithm to implement circular queue. **[10]**

OR

Explain the concept of queue, operations of queue and types of queue. **[10]**

Q4) Write an algorithm to insert elements in the linked list. **[10]**

OR

Write an algorithm to implement double linked list. **[10]**

P.T.O

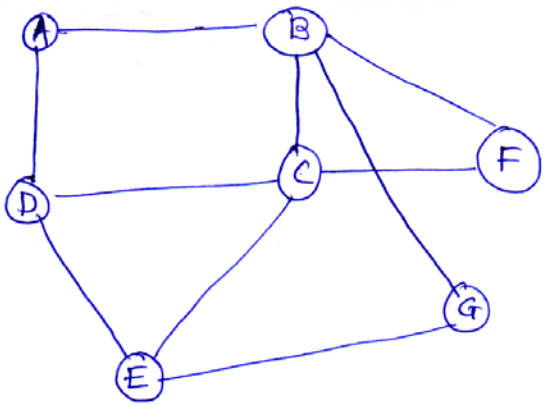
Q5) Construct AVL tree for the following **[10]**

5, 7, 2, 9, 1, 3, 8, 4, 6, 15

OR

Explain Binary Search Tree (BST), explain traversal of binary tree with suitable example. **[10]**

Q6) Find out the adjacency matrix and adjancency list. **[10]**



OR

Write Dijkstra's algorithm. **[10]**

Q7) Write short note on (any two) : **[10]**

a) Application of stack

b) B-Tree

c) Minimum Spanning Tree

Total No. of Questions : 7]

SEAT No. :

PB850

[Total No. of Pages : 2

[6204]-202

First Year M.C.A. (Management)

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 right side indicate full marks.***

Q1) Design HTML form for online order of pizza & bill payment. Assume suitable fields & validate any 5 fields using Javascript. **[10]**

Q2) Explain event handling in Javascript with suitable example. **[10]**

Q3) Write an external CSS for following states/properties Apply styles on any HTML page. **[10]**

a) Paragraphy with blue color & size 12pt.

b) Body with background image & no repeat.

c) Image border dotted and 2px and red.

d) Div with animation direction - alternate with delay 2s

e) UL with list as image with position inside

P.T.O.

Q4) Explain atleast 5 filters in Jquery with suitable example. **[10]**

Q5) Write PHP code to perform CRVD operations on employee leave details (Use suitable fields) **[10]**

Q6) How to use HTTP environment variables in PHP? Explain with suitable example. **[10]**

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

a) Canvas Vs SVG

b) GET & Post Methods

c) Plugins in Jquery



Total No. of Questions : 7]

SEAT No. : [ ]

PB851

[Total No. of Pages : 2

[6204]-203

First Year 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 HTTP protocol? Explain HTTP Response and Request methods. **[10]**

b) For the given class C, 192.168.63.1 and subnet mask 255.255.255.192.**[5]**

Calculate

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 29 subnets and also find the number of hosts possible in each subnet. **[5]**

Q2) Describe the OSI 7-layer model in detail. **[10]**

Q3) What is DNS? Explain DNS Query message and Response message in detail.**[10]**

Q4) What is firewall? Explain different types of firewalls in detail. **[10]**

P.T.O.

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

Q6) a) Generate CRC code for the data word 1100110010 using the divisor 11001. **[10]**

OR

b) Generate a Hamming code with binary value 1101100101 using an even parity. **[10]**

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

a) Topologies

b) Switching

c) HDLC protocol

d) UDP connections

e) FTP



Total No. of Questions : 5]

SEAT No. :

PB852

[Total No. of Pages : 4

[6204]-204
First Year M.C.A. (Management)
MT - 21 : BUSINESS STATISTICS
(2019 Pattern) (Semester - II)

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

Instructions to the candidates:

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

Q1) a) Define statistics. Explain different applications of statistics. **[7]**

b) Define sampling. Explain the different methods of sampling. **[7]**

OR

c) Explain correlation and also define how is it applied for more than two variables. **[7]**

d) Explain in detail the procedure to carry *t* test in different situations. **[7]**

Q2) a) The daily average wage of all workers in a factory is Rs. 45150/-. If the average wages paid to male and female workers daily are Rs. 495/- and Rs. 350/- respectively. Find the percentage of male & female workers employed by the factory. **[7]**

b) The average daily wages, standard deviation of daily wages and number of workers in two produciton units A and B are given below : **[7]**

	Unit A	Unit B
No. of workers	70	122
Average daily wages	Rs. 98.70	Rs. 114.60
Standard deviation	Rs. 7.70	Rs. 12.40

i) Which unit is more consistent in daily wages? Why?

ii) Calculate average and standard deviation of all the workers in the two units A and B taken together.

OR

P.T.O.

c) Find appropriate measure of dispersion for the following distribution. **[7]**

Class	< 15	15-30	30-45	45-60	60-75	75-90	90 and above
Frequency	9	17	22	32	27	21	15

d) Find Geometric mean for following frequency distribution. **[7]**

Class	0-10	10-20	20-30	30-40	40-50
Frequency	9	13	19	14	8

Q3) a) Two independent samples of 8 and 7 items gave the following values. **[7]**

Sample A	12	14	13	11	15	9	15	4
Sample B	15	12	16	14	11	8	18	

Examine whether the difference between means of two samples differ significantly at 5% level of significance.

b) In a survey of 200 boys, out of which 85 boys who were intelligent, 53 had skilled fathers; while 75 of the un intelligent boys had unskilled fathers. Do these figures support the hypothesis that skilled fathers have intelligent boys? **[7]**

OR

c) Machine is intended to fill tins of 16 kg. Ten oil tins are taken at random from an automatic filling machine. The mean weight of 9 tins is 15.82 kg. With standard deviation of 0.47 kg. Is machine working properly? **[7]**

d) 200 digits are chosen at random from a set of tables. The frequencies of the digits are as follows :

Digit	0	1	2	3	4	5	6	7	8	9
Frequency	17	21	24	20	19	22	20	18	21	18

Use chi-square test to assess the correctness of the hypothesis that the digits were distributed in equal numbers in the tables from which they were chosen. **[7]**

Q4) a) An enquiry into the budgets of middle-class families in Mumbai gave the following information. **[7]**

Expenses on	Food	Rent	Clothing	Full	Misc.
	30%	17%	23%	12%	18%
Price (2018) in Rs.	150	54	112	32	63
Price (2019) in Rs.	172	68	137	47	96

Find the cost of living index of 2019 with respect to 2018.

b) Following data give expenses for advertisement and the corresponding sales obtained. Find the regression live of sales on advertisement and from this live determine expected sales when advertisement expenses are Rs. 40,000/-. **[7]**

Advt. Exp. (Rs'.000)	11	15	24	32	57	63	76
Sales (Rs. Lakhs)	2.2	3.4	4.6	5.1	6.9	8.3	10.5

OR

c) From the following data, construct an index for 2017 taking 2016 as base by the average of relatives method using : **[7]**

i) Arithmetic mean

ii) Geometric mean for averaged relatives.

Commodity	Price in 2016 (Rs)	Price in 2017 (Rs)
A	52	74
B	42	68
C	81	97
D	111	134
E	17	22

d) Let X_1, X_2 and X_3 be the height in cms. of son, mother and father respectively. The sample give following results : **[7]**

Mean of X_1, = 171, mean of X_2 = 162, mean of X_3 = 168

Standard deviation of X_1 = 2.6, standard deviation of X_2 = 2.9, standard deviation of X_3 = 2.2 r_{12} = 0.28, r_{13} = 0.49, r_{23} = 0.51.

Find regression plane of X_1 on X_2 and X_3, and estimate X_1 when X_2 is 164 cm and X_3 is 178 cm.

Q5) a) Calculate the trend value by the method of least squares. Also calculate the monthly increase in sales and trend value for 2009. **[7]**

Year	2000	2001	2002	2003	2004	2005	2006
Sales (Rs. Lakhs)	123	128	135	139	143	147	153

b) Explain the process of finding trend by using four years moving average method. **[7]**

OR

c) Calculate three years moving average of production values. **[7]**

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Production in tones	15	23	32	37	44	49	51	58	65	73

Year	2015	2016	2017	2018	2019
Production in tones	88	96	104	112	79

d) The sales data of an item in six shops before and after a special promotional compaign are as under. **[7]**

Shops	A	B	C	D	E	F
Sale before compaign	50	21	30	43	47	38
Sale after compaign	55	25	27	54	55	42

Can the compaign be judged as a success at 5% level of significance?



Total No. of Questions : 6]

SEAT No. : [ ]

PB853

[Total No. of Pages : 2

[6204]-205

First Year M.C.A. (Management)

BM-21: PRINCIPLES AND PRACTICES OF MANAGEMENT & 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) Shreeya and Aanand both are working for a software company. The manager of the new product division was originally the leader of the project team for which she interviewed and hired Aanand. Shreeya, was another project team member, also interviewed Aanand, but strongly opposed hiring him for the project because she thought he was not competent to do the job.

Seven months after Aanand was hired, the manager left the project to start her own company and recommended that Aanand and Shreeya serve as joint project leaders. Shreeya agreed reluctantly with the stipulation that it be made clear she was not working for Aanand. The General Manager consented; Shreeya and Aanand were to share the project leadership.

Within a month Shreeya was angry because Aanand was representing himself to others as the leader of the entire project and giving the impression that Shreeya was working for him. Now Shreeya and Aanand are meeting with you to see if you can resolve the conflict between them.

Shreeya says : "Right after the joint leadership arrangement was reached with the General Manager, Aanand called a meeting of the project team without even consulting me about the time or content. He just told me when it was being held and said I should be there. At the meeting. Aanand reviewed everyone's duties line by line, including mine, treating me as just another team member working for him. He sends out letters and signs himself as project director. which obviously implies to others that I am working for him." Aanand says: "Shreeya is all hung up with feelings of power and titles. Just because I sign myself as project director doesn't mean she is working for me. I don't see anything to get excited about. What difference does it make? She is too sensitive about everything. I call a meeting and right away she thinks

I'm trying to run everything. Shreeya has other things to do other projects to run so she doesn't pay too much attention to this one. She mostly lets things slide. But when I take the initiative to set up a meeting, she starts jumping up and down about how I am trying to make her work for me."

Questions:

a) Identify the types of the individual conflicts discussed between Shreeya and Aanand.

b) What are the possible ways to deal with the conflicts between Aanand and Shreeya? Also give suggestions to avoid this conflict in the first place? **[10]**

Q2) Explain any two types of leadership styles with suitable examples. **[10]**

Q3) "Garry was a team member with whom many of the collogues were not ready to work with. The reasons could include his nature of hiding the necessary details from the collogues and being very possessive and dominating in the group meeting though he may or may not be correct every time." In the light of given scenario, identify the type of ego state and explain the suitable transactional analysis in the case. **[10]**

Q4) Define and explain the concept of 'Team'. What are various features of team which make a team different than a group? **[10]**

Q5) What is 'Bounded Rationality'? Explain Herbert-Simon's model of decision making. **[10]**

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

a) Planning

b) Principles of Scientific Management

c) Territorial Organization

d) Managerial Levels and respective functions

e) Types of Corporate Culture

Total No. of Questions : 7]

SEAT No. :

PB-854

[Total No. of Pages : 2

[6204]-301
M.C.A (Mgt)
IT - 31 : 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 where necessary***

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

a) What is abstract class in java?

b) What is Encasulation in java?

c) What is exception handling in java?

d) What is Runnable Interface in java?

e) What is Buffered Reader in java?

f) What is java.io package contains?

Q2) What are Input Stream Reader is java? Explain with example to read file content using java.io. **[10]**

OR

Explain 5 string functions in java.

Q3) What is linked list in java? Explain with example. **[10]**

OR

Explain Map & Sorted Map in java.

Q4) Create Bouncing Ball application in java. **[10]**

OR

What are text & key Listners in java.

P.T.O

Q5) Create JDBC application to display list of tail students in given subject (Assume suitable table structure). **[10]**

OR

What is session handling in Servelet explain with example.

Q6) Write JSP programme to register for placement drive (Assume suitable table structure). **[10]**

OR

Write JSP action tags & their application.

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

a) Java Beans

b) MVC

c) Socket

d) RMI



Total No. of Questions : 8]

SEAT No. : ____

PB855

[Total No. of Pages : 2

[6204]-302
S.Y.M.C.A.(Management)
IT-32: DATA WAREHOUSING & DATA MINING
(2019 Pattern) (Semester - III)

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

Instructions to the candidates:

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

Q1) What is regression and explain the types of regression. **[10]**

Q2) What is data preprocessing and Explain various tasks involved in data preprocessing. **[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]**

Q5) Why Association Mining is necessary, Discuss Pros and Cons of Association Rules. **[10]**

Q6) Explain Classification by Decision Tree Induction. With Example. **[10]**

P.T.O.

Q7) What is the concept of Clustering? Explain K-means algorithm for cluster analysis with suitable example. **[10]**

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

a) Data mining versus Knowledge Discovery process.

b) Applications of data mining.

c) Components of Datawarehouse.

d) Genetic algorithm.

e) Text Mining.

f) Data visualization.

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Total No. of Questions: 8]

SEAT No. : ____

PB856

[Total No. of Pages :1

[6204]-303
S.Y.M.C.A. (Management)
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 a Tech Summit Management Application. **[10]**

Q2) Define Software Reliability and elaborate on Reliability Measurement Factors **[10]**

Q3) Demonstrate Software Testing Life Cycle. **[10]**

Q4) Describe Structural Testing and explain any two white box testing techniques with example. **[10]**

Q5) Write four test cases for registration for a virtual exhibition interactive web app, covering both positive and negative scenarios **[10]**

Q6) What is CAST? Describe any five types **[10]**

Q7) Explain W model with a neat diagram **[10]**

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

a) Defect Life Cycle
b) Equivalence Partitioning
c) Quality Metrics



Total No. of Questions : 8] **SEAT No. :**

PB-4469 **[Total No. of Pages : 1**

[6204]-304R

M.C.A (Management Faculty)

IT - 34 : CLOUD COMPUTING

(2019 Pattern) (Semester - III)

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

Instructions to the candidates:

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

Q1) Define Cloud Computing. Explain cloud services models and types with examples. **[10]**

Q2) Explain SaaS and Web services. **[10]**

Q3) Explain following types of virtualization like server, storage and network. **[10]**

Q4) Explain streaming issues and inter cloud issues in cloud computing. **[10]**

Q5) Explain security and various issues in cloud. **[10]**

Q6) Explain web (1.0, 2.0 & 3.0) and web operating system. **[10]**

Q7) What is SoA? Explain benefits of using SoA. **[10]**

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

a) IaaS
b) NIST Model
c) AWS

▽▽▽▽

Total No. of Questions: 8]

SEAT No. : ____

PB858

[Total No. of Pages :4

[6204]-305
Second Year M.C.A. (Management)
MT-31: PROBABILITY AND COMBINATORICS
(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 subquestions out of 5. **[15]**

a) A bag contains 17 counters marked with the numbers 1 to17. A counter is drawn and replaced and then second counter is drawn. What is the probability that

i) First number is even and second is odd.

ii) Both are even nos.

b) Find the coefficient of $x^6y^8z^9$ in the expansion of $(2x^3 - 3y^2 - 5z)^{15}$

c) In a random arrangement of the letters of the word 'STATISTICS' find the probability that all vowels come together

d) Following is the joint probability mass function of (x, y)

y \ x	1	2	3	4
1	1/27	3/27	2/27	4/27
2	2/27	1/27	2/27	1/27
3	2/27	3/27	2/27	4/27

Find

i) Marginal distribution of X and Y

ii) Conditional probability distribution of Y given $x = 2$

iii) Conditional Probability distribution of X given $y = 1$

e) If Mean of binomial distribution is 4 and variance is 2 find

i) $P(x = 3)$

ii) $P(x = 0)$

iii) $P(0 \leq x < 3)$

P.T.O.

Q2) a) Find how many numbers between 1 to 2000 both inclusive are divisible by 2 or 3 or 5 or 7. **[5]**

b) A committee of 4 people is to be appointed from 3 officers of production department 4 of purchase department 2 of sales department and 1 chartered accountant. Find the number of ways committee can be formed so that. **[5]**

i) each department is represented

ii) 1 CA is always selected

Q3) a) A factory has 65% male workers 70% of the total workers are married and 42% of male workers are married. Find the probability that a worker chosen at random is **[5]**

i) Married female

ii) Male or married

b) Prove the following by using combinational arguments. **[5]**

i) $\binom{2n}{n} = \binom{n}{0}^2 + \binom{n}{1}^2 \ldots\ldots\ldots\ldots + \binom{n}{n}^2$

ii) $\binom{m+n}{r} = \binom{m}{0}\binom{n}{r} + \binom{m}{1}\binom{n}{r-1} \ldots\ldots\ldots\ldots \binom{m}{r}\binom{n}{0}$

Q4) a) A monthly balance on the bank account of a credit card holder is assumed to be normally distributed with mean Rs. 5200 and standard deviation Rs. 950. Find the Expected no of people out of 10,000 who have credit card balance **[5]**

i) Over 6,700

ii) between Rs. 4,300 and 6,400

b) If continous random $X \sim \cup(3,12)$ find mean and variance of X. **[5]**

Q5) a) Joint probability density function of (x, y) is $f(x,y) = c(x^2 + 2xy)$

$0 \le x < 1, -1 < y \le 2$ **[5]**

Find

i) C

ii) Marginal Probability density function of x

b) An insurance company insures 4000 people against the loss of both eyes in a car accident. Based on previous data, the rates were computed on the assumption that on an average 10 persons in 1,00,000 will have car accident each year resulting in this type of injury. What is the probability that more than 2 of the insured will collect on their policy in a given year. **[5]**

Q6) a) If X is continous random variable where $f(x) = kx^2 \quad 1 \le x \le 4$ **[5]**

Find

i) K

ii) E(X)

iii) V(X)

b) The mean yield for one acre plot is 662 kilo with standard deviation of 32 kilo. Assuming normal distribution, how many one acre plots in a batch of 1000 plots would you expect to have yield. **[5]**

i) Over 708 kilo

ii) Below 625 kilo

iii) Between 590 and 725 kilo

Q7) a) The probability that x, y and z becoming manager are 4/9, 2/9 and 1/3 resp. The probability that the Bonus scheme will be introduced if x y and z become managers are 3/10, ½ and 4/5 respectively. What is the probability that **[5]**

i) Bonus scheme is introduced

ii) If Bonus Scheme is introduced, it will be by manager y

b) A discrete random variable X has following distribution **[5]**

X	–2	–1	0	1	2	3
P(X)	k	0.1	2k	0.2	3k	0.3

Find

i) K

ii) E(X)

iii) P[|X|≤1]

Q8) Solve any 3 subquestions out of 5. **[15]**

a) Define following terms with illustration

i) Sample Space

ii) Mutually exclusive events

iii) Two Independent events

b) If 4 cards are drawn from a pack of 52 cards. Find the number of ways in which cards are drawn so that

i) All are of different suit

ii) All are of same suit

iii) 4 cards contain 1 king

c) Find the number of integer solution of the equation

$x_1 + x_2 + x_3 + x_4 = 32$ subject to

$x_1 \leq 15, x_2 < 12, x_3 \leq 18, x_4 \leq 9.$

d) A manufacturer who produces medicine bottle, find that 0.1% of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer buys 100 boxes from the producer of bottle. Find how many boxes will contain

i) no defective

ii) Atleast two defective

e) For discrete random variable

X	–1	0	1	2	3	4
P(X)	0.05	0.1	0.22	0.18	0.25	0.2

Find

i) E(2x+4)

ii) V(2x+4)



Total No. of Questions : 8]

SEAT No. :

PB-859

[Total No. of Pages : 2

[6204]-401

M.C.A (MANAGEMENT)

IT - 41 : Python Programming

(2019 Pattern) (Semester - IV)

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

Instructions to the candidates:

1) ***Solve Q.1 and 8 are compulsory.***
2) ***Solve any 5 from remaining.***
3) ***Figures to the right indicates full marks.***

Q1) a) Explain Python Program flow control with proper example. **[5]**

b) Difference between list and tuple. **[5]**

Q2) Explain the concept of class and object in python with suitable example. **[10]**

Q3) a) Write a program to plot a bar chart. **[5]**

b) What is Pandas? Explain data frames in Pandas. **[5]**

Q4) a) Explain functions in Python with example. **[5]**

b) Write a program to print sum of cubes of the values of n variables. **[5]**

Q5) Explain password, email, URL validation using regular expression. **[10]**

Q6) a) Explain multithreading life cycle with suitable diagram. **[5]**

b) Explain static and class methods. **[5]**

Q7) Write a program to demonstrate multilevel inheritance in python. **[10]**

P.T.O.

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

a) Write() and Writeline() in file handling

b) Database connection in Python

c) Exception handling in Python

d) Decorators and Generators.

e) Data Alignment in Pandas.

▽▽▽▽

Total No. of Questions : 7]

SEAT No. :

PB860

[Total No. of Pages : 1

[6204]-402

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

IT - 42 : ESSENTIALS OF ARCHITECTURAL FRAMEWORK

(2019 Pattern) (Semester - IV)

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

Instructions to the candidates:

1) ***Q1 and Q7 are compulsory.***
2) ***Solve any four from remaining.***
3) ***Draw neat and labelled diagram wherever necessary.***

Q1) a) Explain architectural views and view points. **[8]**

b) What is the features of Federal Enterprise Architecture Frame work. **[7]**

Q2) Explain ITIL architecture structure and Behavior. **[10]**

Q3) What is service oriented architecture? Compare service oriented architecture and microservices. **[10]**

Q4) What are architectural design patterns and explain its use in detail. **[10]**

Q5) Explain IT solution architecture for package based solutions. **[10]**

Q6) What is the use of frameworks in programming language illustrate with examples. **[10]**

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

a) Architecture domain

b) Treasury Enterprise Architecture Framework (TEAF)

c) Business process framework (eTOM)

d) ZACHMAN framework

e) Managing Successful Programme (MSP)



Total No. of Questions: 5]

SEAT No. :

PB861

[Total No. of Pages :2

[6204]-403
M.C.A.-II (Management)
IT 43 (405) : 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) What is Intelligent Agent? Explain the various components of agents. **[10]**

b) Explain properties of good knowledge-based system. **[10]**

Q2) a) Explain the various task domains of AI. **[10]**

OR

b) What are different types of knowledge? Explain any two types of knowledge with examples.

Q3) a) What is Depth first iterative deepening (DFID). Explain with example **[10]**

OR

b) State whether the following expression (X) is a Tautology, Contradiction or the Contingency with help of the truth table.

X:(P->Q) v~((P->Q)^(Q->R))

Q4) a) Explain various operations in Propositional Logic **[10]**

OR

b) What is Natural Language processing (NLP)

Q5) Write a short note on (Any four) **[20]**

a) Alpha-Beta pruning

b) Supervised learning

c) Desirable properties of knowledge representation

d) Neural Network

e) Components of Expert System



Total No. of Questions : 8] **SEAT No. :**

PB-862 **[Total No. of Pages : 4**

[6204]-404

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 5 from remaining.***
3) ***Figures to the right side indicate full marks.***

Q1) a) A project has the following activities and other characteristic **[10]**

Activity	Preceding activity	Time Estimate (in weeks)		
		Most optimistic	Most likely	Most pessimistic
A	-	4	7	16
B	-	1	5	15
C	A	6	12	30
D	A	2	5	8
E	C	5	11	17
F	D	3	6	15
G	B	3	9	27
H	E,F	1	4	7
I	G	4	19	28

i) Draw the PERT Network diagram.

ii) Determine the critical path and project completion time.

iii) What is the probability that the project will be completed in 32 weeks.

P.T.O.

b) Solve the following assignment problem for minimum cost **[10]**

	I	II	III	IV
A	2	3	4	5
B	4	5	6	7
C	7	8	9	8
D	3	5	8	4

Does problem has multiple solutions? If yes write all possible solutions.

Q2) In a railway marshalling yard, good trains arrive at a rate of 30 trains per day. Assuming that the inter arrival time follows an exponential distribution and the service time distribution is also exponential with an average 36 minutes. Calculate : **[10]**

a) The mean queue length

b) The probability that the queue size exceeds 10

c) If the input of trains increases to an average 33 per day. What will be the change in (i) & (ii)

Q3) Solve the following transportation problem to minimize the cost **[10]**

	Destination				
Origin	D_1	D_2	D_3	D_4	Supply
O_1	10	0	20	11	15
O_2	1	7	9	20	25
O_3	12	14	16	18	5
Demand	12	8	15	10	

Q4) Solve the following LPP by simplex method **[10]**

Max $z = 6x_1 + 10x_2 + 2x_3$

Subject to $2x_1 + 4x_2 + 3x_3 \leq 40$

$x_1 + x_2 \leq 10$

$2x_2 + x_3 \leq 12$

$x_1, x_2, x_3 \geq 0$

Q5) The production department of a company required 3600 kg of raw material for manufacturing a particular item per year. It has estimated that the ordering cost is Rs 36 per order and cost of carrying inventory is 25% of the investments in inventories. The price is Rs 10 per kg. Determine : **[10]**

a) The economic order quantity for the company

b) Total cost of inventory

c) Time between two orders

d) Number of orders in a year

Q6) Seven jobs go first over machine 1 and then over machine 2. Process time in hours are given as below. Time is given in minutes. Find the optimal sequence in which jobs should be processed. Also find **[10]**

a) Total Elapsed time

b) Idle time of Machine 1 and Machine 2

Job	A	B	C	D	E	F	G
Machine 1 (in min)	6	24	30	12	20	22	18
Machine 2 (in min)	16	20	20	12	24	2	6

Q7) The following mortality rate have been observed for a certain type of fuse:**[10]**

Week	1	2	3	4	5
% failing by the end of week	5	15	35	57	100

There are 1000 fuses in use and it costs Rs 5 to replace an individual fuse. If all the fuses were replaced simultaneously, it would cost Rs 1.25 per fuse. It is proposed to replace all fuses at fixed intervals of time, whether or not they have burnt out, and continue replacing burnt out fuses as they fail. At what intervals the group replacement should be made? Which replacement policy should be followed and why?

Q8) Solve the following game theory by using dominance principle **[10]**

Player B

Player A	I	II	III	IV	V	VI
1	4	2	0	2	1	1
2	4	3	1	3	2	2
3	4	3	7	−5	1	2
4	4	3	4	−1	2	2
5	4	3	3	−2	2	2

Total No. of Questions : 6]

SEAT No. : ____

PB863

[Total No. of Pages : 2

[6204]-405

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

BM-41: INFORMATION SYSTEM AND SECURITY AUDIT

(2019 Pattern) (Semester - IV)

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

Instructions to the candidates:

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

Q1) KickstartCooperationLtd is a company providing customer and internet banking facilities. Its main customers are some of the biggest banks of Africa. Its employees, who have access to all the financial accounts, personal data and ATM card information of approximate 30 million clients of these banks. You have been deputed as Security Administrator and have been allocated the duty to examine the possible security breaches which might occur. **[10]**

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

b) What are your suggestions to control these threats?

Q2) a) Explain Indian IT Act-200. **[5]**

b) Explain the 3 pillar's (CIA) of Information Security. **[5]**

Q3) CowDunk fertilizer industry decided to computerized their operations by using email and SMS plugging services for communication with cowdunck producing customers. You have been deputed by your software company as information security policy maker for this sugar factory. **[10]**

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

P.T.O.

b) What security standards you will going to prose for practicing in above case.

Q4) What is information Security Controls? Explain RSA algorithm. **[10]**

Q5) a) Government authority is planning to implement online voting system for all typeselections of their country. You have been deputed as an IT Auditor to identify the possible threats and input control for such system. **[10]**

i) Explain physical access control in IS Audit

ii) Auditing steps details

b) Explain IT governance framework COBIT in detail. **[10]**

OR

a) The trading company is implementing e-SCM, e-CRM and ERP system for their day today operations. You have been asked to conduct technology based audit and suggested to do following types of testing as **[10]**

i) Write vulnerability scanning process.

ii) Write steps for penetration testing.

b) Explain IT governance maturity model in detail. **[10]**

Q6) Write short note on. (any two) **[2×5=10]**

a) IS audit process

b) IT governance maturity model

c) Securing mobile database

d) Responsibilities of IS auditor



Total No. of Questions : 8]

SEAT No. :

PB864

[Total No. of Pages :1

[6204]-501
T.Y.M.C.A. (Management)
IT - 51 : SOCIAL MEDIA AND DIGITAL MARKETING
(2019Pattern) (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) ***Figure to the right indicate full marks.***

Q1) A newly established start-up company per pates spare parts for mobile phones for growth of their business they are in process of Digital Marketing with help of Facebook Marketing and twitter Marketing, being Digital Marketing Executive how will you create and promote their Digital Marketing plat form. **[10]**

Q2) How social media marketing is distinct from traditional marketing? Justify?**[10]**

Q3) Discuss branding strategies of Social Media. **[10]**

Q4) What is on page optimization? Explain How it works. **[10]**

Q5) What is off page optimization? Explain How it works? **[10]**

Q6) Explain various tools of social media and Digital Marketing? **[10]**

Q7) Explain PPC (pay per click) Technique and Google Adwords in Search Engine Marketing (SEM)? **[10]**

Q8) Write short note on (Any two). **[10]**

a) PPC

b) Off page optimization

c) SEO Tools

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Total No. of Questions : 7] **SEAT No. :**

PB865 **[Total No. of Pages : 1**

[6204]-502
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 iOS Architecture with a neat diagram. **[10]**

Q2) What is Fragment? Explain Fragment Life cycle? **[10]**

Q3) Design android application for login activity. Write an android code to check login credentials with username = "SPPU" and password = "Exam". Display appropriate message on Toast to the user. **[10]**

Q4) Write an android application using SQLite to create courses table (Course-Id, Course_name, Course_duration, Course_fees). Write a code to insert and delete records. **[10]**

Q5) Explain XML parsing Demonstrate it with appropriate example. **[10]**

Q6) Write a steps to build simple Flutter application. **[10]**

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

a) Array Adapter
b) Menus
c) Activity Life cycle
d) React Native
e) Webview

Total No. of Questions : 6]

SEAT No. : ____

PB866

[Total No. of Pages : 2

[6204]-503

M.C.A. - III (Management)

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 right side indicates full marks.***

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

a) What is difference between agile & waterfall.

b) Delphi Estimation Technique.

c) What is rapid applications development.

d) Explain story points.

e) List key matrix of Agile project.

f) Write short note on - Burndown chart.

Q2) a) List Agile manifesto principles. **[5]**

b) Explain roles and responsibilites of project manager. **[5]**

OR

a) Discuss project management life cycle. **[5]**

b) Write short note on COCOMO model. **[5]**

Q3) a) Explain importance of SEICMM model. **[5]**

b) What is function point Analysis. **[5]**

OR

a) Explain key Agile concepts. **[5]**

i) Velocity

ii) Version & release

b) Write short note on defect management process. **[5]**

P.T.O.

Q4) a) Explain in brief story point. **[5]**

b) Explain product backlog & Sprint backlog in brief. **[5]**

OR

a) Short note on scrum master. **[5]**

b) Explain any two Agile tools. **[5]**

Q5) a) Explain in brief kariban. **[5]**

b) Explain use of Burndown chart in Agile projects. **[5]**

OR

a) Explain role of product owner. **[5]**

b) Explain in brief product Roadmap. **[5]**

Q6) a) Explain benefits of Agile project management. **[5]**

b) Explain any two agile project key metrics. **[5]**

OR

a) Explain product prioritization. **[5]**

b) Explain value driven development in brief. **[5]**

