Total No. of Questions : 5]

SEAT No. : ____

PD-2837

[Total No. of Pages : 3

[6432]-1001
M.C.A.
MANAGEMENT
IT - 11 : Python Programming (PPR 501 MJ)
(2024 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) **Solve any two :** **[2 × 5 = 10]**

a) Write a Python code for list.

i) create a list of animal consisting of following animals-lion, tiger, cow, elephant, zebra.

ii) delete zebra from the list.

iii) print all alternate element from the given list

iv) sort the list in descending order.

v) add horse to the list.

b) Write a Python program to create a set by accepting h elements (0-9 or A-Z or a-z) input from the user.

i) display the set elements and length of the set SI.

ii) count number of digits, lowercase letters, uppercase letters in a set.

c) Write a program to create the separate list of digits from the original list which contains digits & alphabets using list comprehensions.

(Input list = ['a', 'b', 2,43, 'Hi', 900, 'xyz'], Output list = [2, 43, 900])

d) Write a Python program to add two matrices using list. accept elements for the matrices from the user.

P.T.O.

Q2) **Solve any Two :** **[2 × 5 = 10]**

a) Write a function to generate Fibonacci sequence of upto first n term using recursion.

b) Create a generator which will generate the next prime number from the number passed. For example if the number passed is 14, then the next Prime number is 17.

OR

c) Write a user defined exception program in Python which will except age as input from the user and check whether the user is eligible for driving licence or not. If age < 18 it should raise the exception as 'Not eligible for driving licence'.

d) What is Package? explain the different ways to import the modules or packages.

Q3) **Solve any Two :** **[2 × 5 = 10]**

a) Write a Python program to class of bankdemo having attributes bank-account_no, Name, balance write method to deposit, withdraw & check balance of account.

b) Explain concept of operator overloading with suitable example.

c) Write a python program to validate strong password.

d) Write a multithreaded progarm, where one thread print 1 to 10 in ascending order and another thread print 1 to 10 in descending order. Make use of thread synchronization.

Q4) **Solve any One :** **[10]**

a) Write a mongoDB program to create a "Student_info" collection having fields:

Roll No, Name, Course, total marks, percentage write a code to perform following operations

i) Insert 5 documents.

ii) Find the students getting percentage between 70 to 80.

iii) update Roll no for students named as "Rahul"

iv) display top 5 students according to percentage.

v) display students having highest percentage

vi) find all students of course MCA.

vii) sort all students in descending order of their percentage.

b) Write a python program using mongoDB, to create "movies" collection with fields. (title, writer, year, actor, director) write a code to perform following operations.

i) insert 5 documents.

ii) get all movies released before 2010

iii) sort the movies according to director

iv) get all movies with actor set to "Rajnikant"

v) get all documents where director include "R. Kapoor"

vi) update writer of movie "Devra"

vii) delete movie "Devra"

Q5) **Solve any Two :** **[2 × 5 = 10]**

a) Write steps & code to create and render view in a Django.

b) What is the purpose of Url.Py file in Django porject and explain the basic URL configuration.

c) What is the purpose of Django template? design Django template for student registration to course.

d) Write a Django view that filter's student who are enrolled in the MCA course & have marks greater than 75. display result on page.

Total No. of Questions : 5]

SEAT No. : ____

PD-2838

[Total No. of Pages : 2

[6432]-1002

M.C.A. (Management)

DSA 502 MJ : DATA STRUCTURE & ALGORITHMS

(2024 Pattern) (Semester - I)

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

Instructions to the candidates :

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

Q1) a) Write an algorithm to print the smallest and largest element of an array. **[6]**

b) Discuss string manipulation using arrays. **[4]**

OR

c) Write an algorithm to check whether a matrix is a sparse matrix or not. **[6]**

d) Explain the representation of a 2D array in the memory with proper example. **[4]**

Q2) a) Write an algorithm to insert an element in a circular link list : **[6]**

i) In between of list

ii) At end of the list

b) Differentiate between singly & circular linked list. **[4]**

OR

c) Let A and B be two sorted list. Write an algorithm to create a third linked list C, which will have the elements from both A and B but in a sorted manner. If you run out of the elements of one list, then apperd the remaining elements of other list in c. **[6]**

d) Write an algorithm to delete a node from the end of a doubly linked list. **[4]**

P.T.O.

Q3) a) Write an algorithm to perform all operations of a queue using static allocation. (insertion, Deletion, Peek, Traverse) **[6]**

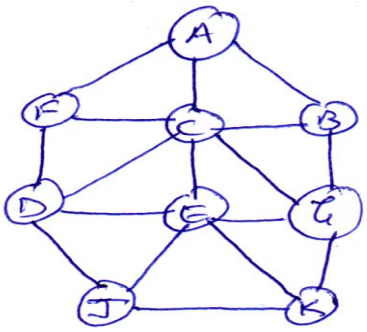
b) Explain application of stacks using examples. **[4]**

OR

c) Convert the given infix expression to postfix expression using stack. **[6]**
A* (B*(C/(D*E)–F))+G

d) Discuss appliactions of a linear queue. **[4]**

Q4) a) Write an algorithm to perform DFS on the given graph. **[6]**



b) For the given in-order & pre-order traversal create a binary tree & write its postorder traversal. **[4]**
INORDER : 4, 2, 5, 1, 3, 6
PREORDER : 1, 2, 4, 5, 3, 6

OR

c) Create an AVL tree by inserting the values 25, 36, 40, 20, 23, 10, 48, 38, 12, 28. Write an algorithm to perform insertion & necessary rotations. **[6]**

d) Compare BFS and DFS. **[4]**

Q5) a) Write an algorithm to search an element in an array using binary search method. **[6]**
25, 83, 4, 2, 75, 16, 45, 5, 99, 1

b) Discuss all hash functions with examples. **[4]**

OR

c) Write an algorithm to sort an array using bubble sort & calculate the time complexity. **[6]**
48, 23, 2, 59, 73, 4, 10, 60, 3

d) Create a Max heap from the given sequence of elements. **[4]**
48, 72, 36, 8, 79, 22, 84, 66

Total No. of Questions : 5]

SEAT No. : ____

PD-2839

[Total No. of Pages : 2

[6432]-1003
M.C.A.
MANAGEMENT
ADB-503MJ: Advanced DBMS
(2024 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) Suppose you are given the following requirements for a simple database for the National Hockey League (NHL): the NHL has many terms, each team has a name, a city, a coach, a captain, and a set of players, each player belongs to only one team, each player has a name, a position (such as left wing or goalie) a skill level, and a set of injury records, a team captain is also a player, a game is played between two teams (reffered to as host-team and guest-team) and has a date (such as May 11th, 1999) and a score (such as 4 to 2), construct a clean and concis ER diagram.**[7]**

OR

Normalize the database with its structure and constraint for the above case study upto 3 NF **[7]**

b) Attempt any one **[3]**

i) Describe and explain codd's rule (any 3)

ii) Explain Generalization with example.

Q2) a) What is transaction? Explain states of transaction. **[5]**

b) Explain concurrency control with time stamp based ordering control.**[5]**

OR

c) What is serializability? Explain testing of serializability with example. **[5]**

d) What is deadlock? Explain method of deadlock handling. **[5]**

P.T.O.

Q3) a) Explain Recovery and Atomicity **[5]**

b) Write short note on Grant and Revoking privilege with example. **[5]**

OR

c) Write log based recovery techniques with example. **[5]**

d) Explain Database Backup and its types **[5]**

Q4) a) Explain need of parallel database with its architecture **[5]**

b) Explain 3-PC commit protocol in DDBMS **[5]**

OR

c) What is distributed database & explain its types **[5]**

d) Explain parallel query processing and optimization. **[5]**

Q5) Attempt any two :

a) Explain the term No SQL. With types of NoSQL **[5]**

b) Explain Mongo DB database with JSON and JSON structure. **[5]**

c) Doctor (Did (primary key), Name, specialization, experience-in-years) patient (pid (primary key), P -Name, Disease, Age, city) Relation between doctor and patient is many to many solve the following queries using above database. **[5]**

i) Display patient name who stay in “pune”

ii) Display doctor name who has highest experience.

iii) Display patient name with their doctor name.

Total No. of Questions : 5]

SEAT No. :

PD-2840

[Total No. of Pages : 3

[6432]-1004

M.C.A.(Part-I) (Management Faculty)

SEP 505 MJ: Software Engineering and Project Management

(2024 Pattern) (Semester - I)

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

Instructions to the candidates:

1) ***Draw neat diagram wherever necessary.***
2) ***Non-programmable calculator is allowed.***

Q1) Life Insurance System has decided to provide automatic insurance to Indian People. **[10]**

- Customers are expected to fillup the insurance report form.
- Agent sends the request and all details of medical report of customer to verification department.
- Verification department enter all details of agent and customer and check their payments and eligibility.
- Verification department sends the report to legal contract department and finance department.
- Legal department sends the policy contract and the finance receipt report to dispatch department.
- Customer is informed about insurance through insurance policy

Prepare Software Requirement Specification (SRS) in detail as per IEEE format.

Q2) Draw use case and class diagram on following case study:

The DTE Maharashtra CET cell administers the common. Entrance test (CET) for various professional courses in Maharashtra. Following tasks are performed throughout the registration process:

P.T.O.

- Candidate has to register on official website.
- Candidate has to provide personal, academic, category details and upload necessary documents using login credentials.
- Candidate has to pay the application fee online through debit card, credit card or net banking, The fee varies based on the course and the applicant's category.
- After successful registration, candidate will be notified about admit card. Candidate can download the admit card from the CET cell website and print it for the exam day.
- CET cell will display the schedule of the exam on website.
- Candidate will attend the CET exam as per the schedule and follow all instructions mentioned on the admit card.
- CET cell will also declare the results. **[10]**

OR

a) Draw an activity diagram for obtaining permanent driving license of four wheeler. **[5]**

b) Draw sequence diagram for profile creation on Linked in platform. **[5]**

Q3) a) Software project of 200 KLOC is being developed under Embedded mode. The project is divided into modules and each module has its own set of effort multipliers. The following values are provided for one of the modules.

- Product complexity (PC) : 1.30
- Required software reliability (RELY) : 1.25
- Time Constraint (TIME):1.15
- Database size (DATA): 1.10
- Use of software tools (TOOL) : 0.95

Calculate

i) Effort

ii) Development Time

iii) Average staff size

iv) Productivity of the product. **[10]**

OR

a) A software development team is tasked with building a software system that is estimated to have 50,000 lines of code (KLOC=50). The project is classified as an organic mode (simple and familiar). Estimate the effort (in person-months) and development time (in months) using the Basic COCOMO Model. **[5]**

b) Explain project management process in detail **[5]**

Q4) a) Mantra is an E-Commerce website. They provide reliable and flexible services to their customers. They have added Add to cart feature so that customers can select and purchase multiple products of their choice. As a customer, seller and admin, you have to identify user stories for the same. **[5]**

b) Compare Agile project management and traditional project management. **[5]**

OR

a) Setflix is on OTT streaming service. It offers a variety of plans to meet entertainment needs. They offer Mobile, Basic, Standard, Premium plans for user. As a user, identify user stories for the given scenario. **[5]**

b) Discuss techniques for estimating story points **[5]**

Q5) Write short note on (Any two) **:** **[10]**

a) Git Hub

b) Project Backlog

c) Agile Reports

d) Quality metrics

Total No. of Questions : 5]

SEAT No. :

PD-2841

[Total No. of Pages : 4

[6432]-1005

M.C.A.

MANAGEMENT

BST 504 MJ : BUSINESS STATISTICS

(2024 Pattern) (Semester - I)

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

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Use scientific (non programmable) calculator.***
2) ***Figures to the right indicate full marks.***

Q1) A) **Solve any One :** **[5]**

i) Write note on different data collection methods.

ii) What are different sources of data? Describe with suitable example.

B) **Solve any One :** **[5]**

i) The following table shows the number of Maruti cars sold by five dealers in a particular month.

Dealer	Saya	Bagalinks	DD motors	B hasin	Motors competent
Cars sold	60	40	20	15	10

Represent above information by pie-chart

ii) The table shows the distribution of ages of the average marks of 50 children in the end of year examinations.

Average marks	0-25	25-40	40-60	60-65	65-80	80-100
Frequency	2	4	10	12	12	10

Construct a histogram to illustrate the data

P.T.O.

Q2) A) **Solve any One :** **[5]**

i) The length of time taken by each of 18 workers to complete a specific job was observed to the following.

Time (in min)	5-9	10-14	15-19	20-24	25-29
No. of workers	3	8	4	2	1

Calculate the mode.

ii) The following distribution gives the pattern of overtime work per week done by 100 employee of a company. Calculate third quartile Q_3 and tenth decile D_{10} and percentile P_{100}

Over time hours	10-15	15-20	20-25	25-30	30-35	35-40
Number of employees	11	20	35	20	8	6

B) **Solve any One :** **[5]**

i) Find out Quartile Deviation for the following data.

Wage upto (Rs)	No.of workers
10	12
20	30
30	65
40	107
50	157
60	202
70	222
80	230

ii) From the observations: 3,9,6,4,5,6 the standard deviation is P.

What will be it's value for

a) 13, 19, 16, 14, 15, 16 and

b) 65, 95, 80, 70, 75, 80

Q3) A) **Solve any One :** **[5]**

I) In a certain hospital 60% of the patients are suffering from typhoid, 50% are suffering from cholera and 30% are suffering from both the diseases. If a patient is selected at random, what is the chance that he will be

i) Suffering from Typhoid or Cholera.

ii) Suffering from heighter of the diseases.

II) A speaks the truth in 75% cases and B in 80% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact.

B) **Solve any One :** **[5]**

I) If on an average one ship in every ten is wrecked, find the probability that out of 5 ships expected to arrive, 4 at least will arrive safely.

II) Suppose on an average 1 house in 1000 in a certain district has a fire during a year. If there are 2000 houses in that district, what is the probability that exactly 5 houses will have a fire during the year? [given that $e^{-2} = 0.13534$]

Q4) **Solve any One :** **[10]**

A) Ten competitors in a beauty contest are ranked by three judges in the following order.

1st Judge	1	6	5	10	3	2	4	9	7	8
2nd Judge	3	5	8	4	7	10	2	1	6	9
3rd Judge	6	4	9	8	1	2	3	10	5	7

Use the rank correlation coefficient to determine which pair of judges has the nearest approach to common tastes in beauty.

B) You are given below the following information about advertisement expenditure and sales.

	Adv. Exp (x) (Rs. crores)	Sales (y) (Rs. crores)
Mean	20	120
S.D.	5	25

Correlation coefficient 0.8

i) Calculate the two regression equations.

ii) Find the likely sales when advertisement expenditure is Rs. 25 crores.

iii) What should be the advertisement budget if the company wants to attain sales target of Rs. 150 crores?

Q5) **Solve any One :** **[10]**

A) Calculate the seasonal index from the following data using the average method

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2003	72	68	80	70
2004	76	70	82	74
2005	74	66	84	80
2006	76	74	84	78
2007	78	74	86	82

B) Calculate trend values by the method of least squares from the data given below. Estimate the value for the year 2011.

Year	2002	2003	2004	2005	2006	2007	2008
Value	75	67	68	65	50	54	41

Total No. of Questions : 5]

SEAT No. : [ ]

PD2842

[Total No. of Pages : 2

[6432]-1006
F.Y. M.C.A. (Management)
FCC 510 - MJ : EC-11-1 : FUNDAMENTALS OF CLOUD COMPUTING
(2024 Pattern) (Semester - I)

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

Instructions to the candidates:

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

Q1) a) What is cloud computing? State the pros and cons of cloud computing. **[5]**

b) Explain public and private cloud deployment models. **[5]**

Q2) a) State different types of virtualization and describe any one in detail. **[5]**

b) Describe SOA with diagram. **[5]**

OR

a) Describe the concept of cloud bursting. **[5]**

b) Describe key services and unique features of AWS. **[5]**

Q3) a) Define XAAS. Explain storage as a service and network as a service. **[5]**

b) What type of services does sales force focus on and how does it help in businesses. **[5]**

OR

a) Explain in detail para virtualization. **[5]**

b) Describe concept of inter cloud & what are the features of multi-clouds. **[5]**

P.T.O.

Q4) a) Describe the importance of machine image in virtualization. **[10]**

OR

b) Describe the role of SLAs in cloud based services and how pricing models are managed in the cloud. **[10]**

Q5) Write short notes. (any 2) **[10]**

a) Cloud service models

b) Hypervisors

c) IBM cloud

Total No. of Questions : 5]

SEAT No. : ____

PD-2843

[Total No. of Pages : 2

[6432]-1007
F.Y. M.C.A. (Management)
(WDES511MJ) EC-11-2: Web Development
(2024 Pattern) (Semester - I)

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

Instructions to the candidates:

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

Q1) a) Create simple blog layout with header, navigation, article, footer & details using semantic elements in HTML5. **[5]**

b) Implement any 5 pseudo classes of CSS3. **[5]**

OR

c) Compare & contrast Canvas & SVG in terms of usage and performance. **[5]**

d) Explain how CSS transitions work. Provide an example of a transition effect. **[5]**

Q2) a) How does fluid layout contribute to responsive web design. Explain with example **[5]**

b) Create a responsive web layout using media queries and viewport meta tag for different devices. **[5]**

OR

c) Discuss techniques for making images responsive. How do srcset and sizes attributes work? **[5]**

d) How Vm,rem and em units in CSS help in fluid typography. **[5]**

P.T.O.

Q3) a) Develop restful API for managing products in inventory system. **[5]**

b) Create a web page where user can upload file. **[5]**

OR

c) What is Routing? Demostrate routing in codeigniter with suitable example. **[5]**

d) Create PHP function that sends a welcome email to the new user. **[5]**

Q4) Write a code using Query builder to insert the record in product table (take suitable assumptions) and count the total number of products from product table **[10]**

OR

id	User Name	email	Password
1	John	John@gmail.com	Pass123
2	Smith	Smith@gmail.com	Pass456
3	Alice	alice@gmail.com	Pass789
4	Brown	brown@gmail.com	Pass321
5	Clark	clark@gmail.com	Pass654

Write Mysql queries for following statements

1) Create the above table with primary key id with proper constraints.
2) Update the email id whose name is Smith
3) Insert the new record above table.
4) Delete the record whose name is clark
5) Show the records in ascending order with username.

[10]

Q5) Solve any two **:** **[10]**

1) Explain session in Codeigniter
2) Explain MVC Framework.
3) Explain hosting techniques
4) Discuss the Git

Total No. of Questions : 5]

SEAT No. : ____

PD-2844

[Total No. of Pages : 3

[6432]-1008

M.C.A. (Management)

EC11-3 : FUNDAMENTAL OF DATA SCIENCE

(FDS 512 MJ) (2024 Pattern) (Semester - I)

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

Instructions to the candidates :

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

Q1) **Solve any Two :** **[10]**

a) Explain the different data science roles.

b) Outline the stages involved in a typical Data Science Lifecycle

c) Describe the data integration and data transformation techniques.

d) What ethical concerns should be considered in Data Science.

Q2) **Solve any One :** **[10]**

a) Solve the system of linear equations using Gaussian Elimination:

$2x + 3y - z = 5$

$4x + y + z = 6$

$-2x + 5y + 2z = 3$

b) Show that $f(x) = x^3 + 4x^2 - l0 = 0$ has root in [1, 2] and use the Bisection method to determine an approximation to the root that is accurate up to decimal 3 places.

P.T.O.

Q3) **Solve any Two :** **[10]**

a) Demonstrate data Wrangling process with suitable example

b) Suggest possible solution for the challenges of data processing.

c) How to ensure data privacy and security in data science.

d) Apply technique to handle outlier in a given dataset and justify your approach.

Dataset: Library Management System

Book_ID	User_Age	Books_Borrowed	Days_Overdue	Fine_Amount
101	25	5	0	0
102	18	10	3	15
103	32	2	1	5
104	45	15	7	50
105	40	1	0	0
106	20	30	10	100
107	27	3	2	10
108	70	0	0	0
109	22	50	25	200
110	65	4	0	0

Q4) **Solve any One :** **[10]**

a) **Dataset: Fitness Data**

Day	Steps	Heart Rate	Calories
Day 1	8000	70	250
Day 2	12000	75	300
Day 3	5000	80	200
Day 4	15000	65	400
Day 5	9000	72	350

For above Fitness data answer the following

i) Read data as NumPy array.

ii) Calculate the maximum number of steps taken in any of the 5 days.

iii) Identify the day with the highest calories burned.

iv) Determine the variance heart rate over the 5 days.

v) Count how many days had steps greater than 10,000.

b) **Dataset: Weather Data**

Max Temp	Min temp	City	Rain Fall (in mm)
45	30	Delhi	25.6
34	24	Guwahati	41.5
48	34	Chennai	36.8
32	22	Bangluru	40.2
44	29	Mumbai	38.5
39	37	Jaipur	24.9

For the given dataset answer, the following

i) Read data as a DataFrame using Pandas.

ii) Compute the sum of every column of the DataFrame.

iii) Determine the correlation between MaxTemp and RainFall.

iv) Identify which city recorded the highest rainfall.

v) Compute the average MinTemp and RainFall for the first 4 rows.

Q5) **Solve any One :** **[10]**

Dataset: Daily Consumption by Age Group

Age	Daily Cosumption			
	Dairy	Staple Food	High Calorie Food	Supplements
0-10	50	30	10	10
11-30	35	45	15	5
31-50	25	55	13	7
51-80	40	40	4	16

a) Write a python code to draw multiline plot for the above data frame using matplotlib,Decorate the plot using at least 6 attributes.

b) Write a python code to draw stacked bar plot for the above data frame using matplotlib, Decorate the plot using at least 6 attributes

Total No. of Questions : 5]

SEAT No. : ____

PD-2845

[Total No. of Pages : 2

[6432]-1009
M.C.A.
MANAGEMENT FACULTY
ICE 513 MJ : E11-4 : Introduction to Cyber Security
(2024 Pattern) (Semester - I)

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

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Question number should be clearly mentioned.***
3) ***Draw neat labeled daigram wherever necessary.***

Q1) a) What is cybercrime? Explain various Problems Associated with cyber crime. **[5]**

b) Explain Impact of Cyber bullying and cyberstalking. **[5]**

OR

c) Discuss various traditional problems associated with computer crime. **[5]**

d) Differentiate between Hacking & Ethical Hacking. **[5]**

Q2) a) The Energy Monitoring Service System maintains the information of their customers & various services to them. The consumption and billing information of the customer needs to be kept accurate and confidential. Select & write all possible vulnerabilities in software and hardware of Energy Monitoring Service System. **[5]**

b) Identify the impact of emerging technologies like AI and IOT on cybercrime. **[5]**

OR

c) Agile Communication Ltd is a company providing services like internet banking and payment gateways. Major clients include well known banks of India. Bank employees, who have access to all the financial accounts, personal data and plastic card information of approximate 10 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. Plan the security measures to stay safe. **[5]**

d) Illustrate dark web and cybercrime. **[5]**

P.T.O.

Q3) a) "My Chatbot" a Worldwide trading firm is implementing e-CRM system to execute their daily routine activities. Attackers continuously trying to breach the website by applying the different tricks like identity theft to gain the access to their large database. What are the similar kind of attacks or types they are going to employ as per your better understanding? **[5]**

b) Demonstrate Impact of Identity Theft and Financial Fraud. **[5]**

OR

c) In the rapidly evolving digital landscape, financial institutions face a growing threat from cybercriminals who leverage advanced techniques to carry out fraudulent activities. In the view of above scenario determine all likely attacks associated with financial frauds. **[5]**

d) Classify different Identity Thefts. **[5]**

Q4) a) Highlight upon the challenges and ethical considerations in cyber security. **[5]**

b) Discuss copyright, trademark and patent laws and challenges in digital environment in India. **[5]**

OR

c) Explore the Objectives of Information Technology Act, 2000. **[5]**

d) Demonstrate various Legal issues in software piracy. **[5]**

Q5) **Write Short notes (Any Two) :** **[2 × 5 = 10]**

a) PDCA model

b) NGS Auditor

c) ISO 27001

d) Information security policies

Total No. of Questions : 5]

SEAT No. : ____

PD-2846

[Total No. of Pages : 2

[6432]-2001
M.C.A. (Management)
JPR 551 MJ: Java Programming
(2024 Pattern) (Semester - II)

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

Instructions to the candidates:

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

Q1) Solve any two :

a) Define a class calculation to implement method overloading for addition of two integers and two double variables. **[5]**

b) Define class person with suitable data member and methods. And extend this class in Manager class. Display manager details. **[5]**

c) Write a function using lambda expression to calculate power of number.(x^y) **[5]**

b) What is garbage collection? Explain with required method. **[5]**

Q2) Solve any two :

a) Create a thread to display prime numbers between 1 to 500 each number will display after 3 seconds. **[5]**

b) Write a java program to demonstrate how to create user-defined exception. **[5]**

c) Write a Java program to implement arraylist with function to add, remove & sort member. **[5]**

b) Differentiate between checked and unchecked exception. **[5]**

P.T.O.

Q3) Solve any one :

a) Create a HTML page to accept two numbers and write servlet to add given numbers and display result. **[10]**

b) Explain servlet life cycle and demonstrate its methods with example.**[10]**

Q4) Solve any one :

a) Design Java Application (using JSP) for registration of hackthon (student name, Mail Id, Phone No, Gender, Course) and store data in appropriate table. **[10]**

b) Explain JSP directives with example. **[10]**

Q5) Solve any one :

a) Create a spring MVC form to read registration details for Blood donation camp with spring validation & display it. **[10]**

b) Explain spring MVC architecture. And also explain any two spring annotations. **[10]**

Total No. of Questions : 5]

SEAT No. : ____

PD-2847

[Total No. of Pages : 3

[6432]-2002
M.C.A.
MANAGEMENT
STQ - 553 MJ : Software Testing and Quality Assurance
(2024 Pattern) (Semester - II)

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

Instructions to the candidates :

1) ***All questions are compulsory.***
2) ***Figures to the right indicate full marks.***
3) ***Draw daigram wherever necessary.***

Q1) a) Describe software quality assurance and outline its key activities. **[5]**

b) Explain the metrics used to assess and measure reliability. **[5]**

OR

c) Explain the term quality in the context of software engineering and describe product revision factors. **[5]**

d) Describe the significance of ISO 9000 standards in SQA. **[5]**

Q2) a) Outline the steps in software testing life cycle, highlighting the sequence of testing phases. **[5]**

b) Differentiate between fault, defect and failure and describe the common causes of software failure. **[5]**

OR

c) Illustrate the concept of performance testing and detail any three specific performance test categories. **[5]**

d) Discuss the Integration test approaches. **[5]**

Q3) a) In an examination, a candidate must score at least 24 marks to pass, with the maximum possible score being 40 marks.
Using the Equivalence partitioning technique:

i) identify the equivalence partitions for the marks field.

ii) determine the minimun number of test cases required to effectively test the field.

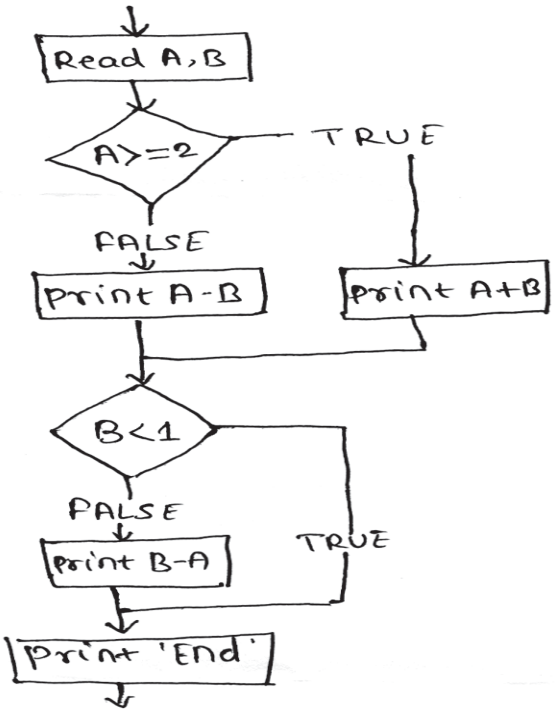
iii) Specify the test cases, including representative values and their expected outcomes. **[5]**

P.T.O.

b) Differentiate between static and dynamic testing. **[5]**

OR

c) Given the following flow chart diagram:
What is the minimum number of test cases required for 100% statement coverage and 100% decision coverage? Justify the answer. **[5]**



d) Discuss inspection process in detail. **[5]**

Q4) a) Cloud kitchen aggregator app, smoke & spice lists and promotes cloud kitchens, making them accessible to customers for online food ordering It enables cloud kitchens to manage their menus, orders, and promotions while integrating with third party delivery partners and payment gateways. The app challenges are handling high-order volumes, real time order updates, semless third-party integrations, and secure transactions.

A Write a test plan for the following sections of the IEEE 829 test plan template for the above application. **[10]**

i) scope of testing
ii) objectives
iii) risks
iv) strategy
v) approach

OR

b) Write suitable test case for the above application. **[10]**

Q5) a) Define CAST and explain its benefits in software testing. **[5**

b) Describe the steps in introducing a testing tool into an organization. **[5]**

OR

c) Explain the purpose of postman in API testing. **[5]**

d) Discuss defect life cycle. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

PD-2848

[Total No. of Pages : 6

[6432]-2003

M.C.A. (Management)

MT - 21 : OPTIMIZATION TECHNIQUES

(OTE 552 MJ) (2024 Pattern) (Semester - II)

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

Instructions to the candidates :

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

Q1) **A) Solve the following (Any One) :** **[8]**

a) Solve with two phase simplex method

Maximize $Z = 3X_1 + 4X_2$

Subject to $2X_1 + 3X_2 \leq 200$

$5X_1 + 4X_2 \geq 100$

$-8X_1 - 4X_2 \leq -80$

Such that, $X_1, X_2 \geq 0$

b) A company has three plants W, X and Y and three warehouses A, B, C. The supplier is transported from the plants to the warehouses which are located at varying distances from the plants. Due to this, the transportation costs from plants to warehouses vary from Rs.8 to Rs.24 per unit.

The company wishes to minimize the transportation costs. The costs (in Rs.) from the plants to the warehouses are shown in the form of a matrix. Determine the optimum shipping schedule. Use LCM for initial solution.

	Warehouse			
Plant	A	B	C	Supply
W	12	8	18	400
X	20	10	16	350
Y	24	14	12	300
Demand	500	200	300	

P.T.O.

B) Explain the following (Any One) : **[2]**

a) Infeasible Solution

b) Slack and Surplus Variable

Q2) **A) Solve the following (Any One) :** **[5]**

a) There are 7 jobs each of which must go through three machines M1, M2 and M3. The corresponding processing time on the machines in hours are as follows

Job	**J1**	**J2**	**J3**	**J4**	**J5**	**J6**	**J7**
M1	3	8	7	4	9	8	7
M2	4	3	2	5	1	4	3
M3	6	7	5	11	5	6	12

i) What is the optimal job sequence that will minimize the total elapsed time?

ii) What is the idle time for each machine (Ml, M2 and M3)?

b) There are seven jobs, each of which has to go through machines A and B in the order BA. Processing time in hours as follows:

Determine an optimum sequence of these jobs that will minimize the total elapsed time

(T). Also find T and calculate idle time for machine A and B

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

B) Solve the following (Any One) : **[5]**

a) The person works in the internet café works for 8 hours a day. The rate of arrival of customers at an internet café follows Poisson distribution with average of fifteen minutes between one customer and the next. The duration of service is assumed to follow exponential distribution with mean of twelve minutes.

i) What is the probability that person arriving at the café will have to wait?

ii) Find the total time for which the person will be idle

b) In a bank with a single cashier, customers arrive on average every 20 minutes and the cashier takes 10 minutes to attend to each customer.

i) What is the average number of customers waiting for the cashier?

ii) What is the average time spent by each customer in the bank?

Q3) **A) Solve the following (Any One) :** **[5]**

a) Three companies introduced new razor blades in the market at the same time, each initially holding an equal market share. After the first year, some changes occurred, which are shown by the following transition matrix:

	A	B	C
A	0.9	0.03	0.07
B	0.2	0.6	0.2
C	0.1	0.2	0.7

Assume no changes in customer buying habits occur. What will be the market share of each company at the end of the first and second year?

b) Two companies, A, B compete against each other. The transition matrix T for people switching each month among them is given by the following transition matrix.

		NEXT	
		A	B
INITAIL	A	65%	35%
	B	45%	55%

Find the long term distribution

B) Solve the following (Any One) : **[5]**

a) The daily demand for Coca-Cola bottles, based on past experience, is given as follows:

Daily Demand	10	20	30	40	50
Probability	0.15	0.10	0.40	0.20	0.15

A manager decides to keep 25 Coca-Cola bottles in stock. Using the following random numbers: 69, 01, 08, 74, 82, 20, 72, 14, 75, 12,25 estimate the average balance stock.

b) The Lajwaab Bakery shop keeps stock of a popular brand of cake previous experience indicates the daily demand as given below

Daily Demand	0	15	25	35	45	50
Probability	0.01	0.10	0.30	0.45	0.12	0.02

Consider the following sequence of random numbers 21, 28, 57, 54, 60, 39, 74, 91, 75, 30. Using this sequence simulate the demand for next 10 days. Find out the stock situation if the owner of the bakery shop decides to make 30 cakes every day.

Q4) **A) Solve the following (Any One) :** **[8]**

a) Consider a CPM network with the following project data:

Activity	Duration (days)	Predecessor(s)
A	4	None
B	3	None
C	6	A
D	2	B
E	5	C,D
F	3	D
G	7	A,B
H	5	E,F

i) Draw a network diagram. Perform Forward Pass and Backward Pass calculations to determine the earliest start (ES), earliest finish (EF), latest start (LS) and latest finish (LF) for each activity.

ii) Calculate the total float and free float for each activity. Identify the activities that are on the critical path.

b) A project consists of 9 activities whose time estimates in weeks & other characteristic are given below

Activity	Preceding activity	most likely time (Week)	Pessimistic time (Week)	Optimistic time (Week)
A	--	4	6	2
B	---	6	6	6
C	--	12	24	6
D	A	5	8	2
E	A	14	23	11
F	B,D	10	12	8
G	B,D	6	9	3
H	C,F	15	27	9
I	E	10	16	4

i) Draw the PERT network & find the critical path (Perform Forward Pass and Backward Pass calculations)

ii) find the probability that the project is completed 1 week before the expected time

Q4) **B) Explain the following (Any One) :** **[2]**

a) Difference between PERT and CPM

b) Dummy Activity

Q5) **A) Solve the following (Any One) :** **[5]**

a) The following table gives profit matrix for different strategy and actions. Find the optimal strategy by using EMV Criterion

States of Nature	Probability	Actions		
		A1	A2	A3
E1	0.15	40	52	45
E2	0.25	70	28	40
E3	0.45	30	70	-50
E4	0.15	30	-50	-70

b) For a given Cost matrix, suggest optimum strategy using-

		Events			
		N1	N2	N3	N4
Strategies	S1	1000	1500	750	0
	S2	250	2000	3750	3000
	S3	-500	1250	3000	4750
	S4	-1250	500	2250	4000

i) Hurwit z Criterion (Alpha = 0.7)

ii) Savage Criterion

Q5) **B) Solve the following (Any One) :** **[5]**

a) Define a zero-sum game and explain the concept of dominance in game theory. Solve the following 2 x 2 zero-sum game using dominance:

	Strategy 1	Strategy 2
Player 1	6	4
Player 2	5	3

Identify the dominated strategy (if any) for both players

Simplify the game using the dominance rule and find the optimal strategies for both players.

b) Solve the following to find the value of the game

		PLAYER B				
		B1	B2	B3	B4	B5
PLAYER A	A1	2	4	3	8	4
	A2	5	6	3	7	8
	A3	6	4	9	8	7
	A4	4	2	8	4	3

Total No. of Questions : 5]

SEAT No. :

PD2849

[Total No. of Pages : 2

[6432]-2004

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

CCM - 560 - MJ : CLOUD COMPUTING MANAGEMENT & SECURITY

(2024 Pattern) (Semester - II)

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

Instructions to the candidates:

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

Q1) a) Explain the six R's of cloud migration with example. **[5]**

b) Discuss the challenges in cloud computing security and propose possible solutions. **[5]**

OR

c) Discuss the importance of role based access control (RBAC) in cloud security. **[5]**

d) Define quality of services (QoS) in cloud computing and its significance. **[5]**

Q2) a) What are different storage types in cloud computing. **[5]**

b) Compare relational and NoSQL cloud databases with example. **[5]**

OR

c) Explain the primary components and architecture of data warehousing. **[5]**

d) Compare different cloud database services like Amazon Aurora, Amazon DynamoDB and Amazon Neptune. **[5]**

Q3) a) Discuss the AWS security services and their role in preventing cyber threats. **[5]**

b) Explain network security in cloud computing. **[5]**

OR

c) How does AWS IAM(Identity & access management) improve cloud security. **[5]**

d) Explain Encryption, Hash functions and VPN as security measures in AWS. **[5]**

P.T.O.

Q4) a) Explain the best practices for AWS Backup & disaster recovery. **[5]**

b) Describe the AWS backup service and its role in automated database backups. **[5]**

OR

c) Solve the following case study with appropriate explanations: **[10]**
A health care organization lost patient data due to an accidental deletion of their AWS - hosted database. How can disaster recovery planning help avoid such losses? What AWS tools and strategies can ensure quick data recovery after accidental deletions?

Q5) Short notes (any two). **[10]**

a) AWS lambda

b) Amazon EC_2

c) Amazon EC_2 lightsail

d) Amazon EC_2 Auto scaling

Total No. of Questions : 5]

SEAT No. :

PD2850

[Total No. of Pages : 2

[6432]-2005
F.Y.M.C.A.
JS-561-MJ : JAVA SCRIPT
(2024 Pattern) (Semester-II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

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

Q1) Attempt any two. **[10]**

a) Write Javascript code that elaborate non primitive data type in details. **[5]**

b) Write a code using Java script function and array is used to create list of companies name as " Bloomberg", "Microsoft", "Uber", "Google", J.P. Morgan", "IBM",, "Netflix" and perform following operations.

• Remove the first company from array

• Add Amazon at the end **[5]**

c) Explain Java script Framwork and libraries in detail. **[5]**

Q2) Attempt any two. **[10]**

a) Write a Java script program that genrates random flowting-point number between 0 (inclusive) an 1 (exclusive) using the math object and then scales it to be between 10 and 20 (inclusive). Print the result. **[5]**

b) Write a Java script program to validate following

Pun code : IMMPO 16221 using Regular expression. **[5]**

c) Discuss the life cycle methods of React. **[5]**

Q3) Attempt any two. **[10]**

a) Write a Java script program using common method get Area() in two different shape classes : circle and rectangle. **[5]**

b) Develop a vehicle rental application. Define a base class vehicle with properties like brand, model, and method display details(). Create a subclass bike that adds a type (e.g. sports, cruiser) and overrides display details() to include the type. Demonstrate method overriding. **[5]**

c) Explain HTTP request with Fetch API. **[5]**

P.T.O.

Q4) Attempt any two. **[10]**

a) Create a news portal each news article is stored in JSON array, display all articles on web page dynamically. **[5]**

b) Design a program that dynamically create and remove HTML div element on the button click. **[5]**

c) Demonstrate generator function with suitable example? **[5]**

Q5) Attempt any one. **[10]**

a) Create a multi page portfolio website using react router. Include pages like home, project, about contact, each route should load appropriate component with some content use navigation like to switch between pages. **[10]**

b) Develop a web application for library system. create a react component using Hooks to fetch list of books from an API and display them in an unordered list. Show 'loading books" while a data is being fetched and handle API errors. **[10]**

Total No. of Questions : 5]

SEAT No. :

PD2851

[Total No. of Pages : 3

[6432]-2006
F.Y. M.C.A. (Management)
MLT 562 MJ : MACHINE LEARNING TECHNIQUES
(2024 Pattern) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***Scientific calculators are allowed.***
2) ***All questions are compulsory.***
3) ***Assume dataset wherever required.***

Q1) a) Differentiate between supervised and unsupervised learning? **[5]**

b) Explain logistic regression with suitable example. **[5]**

OR

c) Explain the concept of data set, labels and features. **[5]**

d) Explain dimensionality reduction techniques. **[5]**

Q2) a) i) A machine learning model is trained to predict if a person has cancer or not. It is tested on the dataset of 1000 patients. The model predicts 30 patients as having cancer and 970 to be healthy. Out of 30 cancer predictions, 20 are actually having cancer and out of 970 healthy predictions, 965 are actually healthy. Calculate accuracy and F1 - Score. **[5]**

ii) The following data shows the sales (in million dollars) of a company. Estimate the sales in the year 2020 using the regression line? **[5]**

x	2015	2016	2017	2018	2019
y	12	19	29	37	45

OR

P.T.O.

b) A university wants to predict whether a student will pass or fail a course based on three factors : **[10]**

i) Study Hours (High/low)

ii) Attendance (Good/poor)

iii) Previous Grades (Excellent/Average/Low)

The dataset is as follows:

Instance	Study Hours	Attendance	Previous Grades	Result
1	High	Good	Excellent	Pass
2	Low	Poor	Low	Fail
3	High	Poor	Average	Pass
4	Low	Good	Average	Pass
5	High	Good	Excellent	Pass
6	Low	Poor	Low	Fail
7	High	Poor	Low	Fail
8	Low	Good	Average	Pass

Constract a decision tree using the CART algorithm to predict the result of statement for the instance {Study Hours : High, Attendance: Poor, Previous Grades : Excellent}

Q3) a) Using the k-means algorithm and Euclidean distance, cluster the following 8 examples into 3 clusters. Consider A1, A4 and A7 as initial seeds (centroids).

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

OR

b) Perform complete linkage agglomerative Hierarchical clustering using the given distance matrix.

Draw the dendrograms for clustering output which should clearly show the order in which the points are merged to form clusters: **[10]**

Item	A	B	C	D	E
A	0				
B	9	0			
C	3	7	0		
D	6	5	9	0	
E	11	10	2	8	0

Q4) Solve any two

a) Given the following parameters for

Q - learning problem: **[5]**

-Learning rate $\alpha = 0.2$

- Reward $r_t = 10$

- Current Q-value $Q(s_t, a_t) = 5$

- Next state's Q-value $Q(s_{t+1}, a_{t+1}) = 8$

-Discount factor r = 0.9

How would you update the Q-value for state - action pair (s_t, a_t)?

b) Explain self - training and co-training techniques in semi - supervised learning. **[5]**

c) Explain Deep Q-Networks (DQN) and compare DQN & Q - learning. **[5]**

Q5) Solve any one.

a) A global bank faced significant financial losses due to credit card fraud. Despite traditional fraud detection methods, fraudulent transactions continued to slip through a machine learning - based fraud detection system to improve real - time fraud detection and reduce false positive.**[10]**

Operations :

i) Develop machine learning model in python for above problem.

ii) Identify independent variables and dependent variables.

iii) Explain the importance of data preprocessing before training the model.

OR

b) A retail company operates multiple stores and wants to predicts daily/ weekly sales for each store based on historial sales data, store characteristics and external influences. **[10]**

Consider the following dataset features : Sales, store ID, Day of the week, date perform following operations.

i) Develop machine learning model in python for above problem.

ii) Identify independent variables and dependent variables.

iii) Explain the importance of data preprocessing before training the model.

✪ ✪ ✪

Total No. of Questions : 5]

SEAT No. :

PD2852

[Total No. of Pages : 2

[6432]-2007
First Year M.C.A. (Management)
ECS 563 MJ-EC21-4 : Essentials of Cyber Security
(2024 Pattern) (Semester-II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***All questions carry equal marks.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figure to the right indicate full marks.***
5) ***Your Answers will be valued as whole.***

Q1) a) What are the various security & management frameworks and standards in cyber security? **[5]**

b) "Cyber security increasing threat landscape". Discuss. **[5]**

OR

a) Why cyber security is crucial for businesses and government? **[5]**

b) What are the identical steps to deal with the cyber security challenges? **[5]**

Q2) a) A multispeciality hospital has automated all its day-to-day activities, including staff details, patient details, and billing details etc. through an ERP. All of a sudden they start facing malacious activities in their ERP. A Security Audit of an ERP revealed several pitfalls including overall security aspects. As an security consultant, suggest various ISSP Components to overcome these challenges. **[7]**

b) Enlist all essential components of data transfer governance in Cyber space. **[3]**

OR

a) A Reputed organization involved in smart grid industry known for its industrial expertise including powerline communication technologies for smart grid and Industrial automation. They started experiencing a chain of major data breaches leading to the loss of client trust and financial penalties. They lacked a clear, comprehensive information security policy and various departments operated with different standards. What are the various EISP components they should consider to overcome this scenario? **[7]**

b) Write a short note on privacy regulation. **[3]**

P.T.O.

Q3) a) Describe the common types of cyber threats that organizations face in today's digital landscape. **[5]**

b) Develop a risk mitigation strategy for a company facing risks from insider threats. **[5]**

OR

a) What is the concept of a canary in Cybersecurity and how it help in detecting and analyzing cyber threats? **[5]**

b) Enlist all possible cyber crime targetting computer systems. **[5]**

Q4) a) A criminal steals a smart phone and misuses it for a range of illegal activities, including unauthorized financial transactions, sending threatening emails, sharing private photos on social media platforms, making abusive calls and ultimately selling the phone to another individual. This scenario explores the series of malicious actions taken by the theif. You have to identify the consequences and the steps taken to investigate and resolve the case. Also highlight upon the legal consequences and penalties. **[7]**

b) What are the key legal and ethical concerns related to emerging technologies like AI, IOT, blockchain and social media? **[3]**

OR

a) A well known International University having multiple departments. They are maintaining entire data of all the departments including students, staff, library etc. On the cloud. To access this data, they have a website which provide priviledged access to different entities mention above. Group of hackers is targeting their website and discrupting intended and most essential activity. These hackers involved in various offensive conducts. In the view of above scenario, identify the possible crimes they are going to commit and the subsequent consequences raised because of this illegal act. **[7]**

b) What is cyber Warfare? Explain. **[3]**

Q5) a) Give the importance of threat management and response. **[5]**

b) What are the challenges associated with collecting and preserving digital evidence from different types of devices? **[5]**

OR

a) What are the major challenges faced by digital forensic Investigators? **[5]**

b) What information can be retrieved from an email header during forensic analysis? **[5]**

Total No. of Questions : 5]

SEAT No. :

PD-2853

[Total No. of Pages : 2

[6432]-2008
F.Y. M.C.A.
MANAGEMENT
ECS 564 MJ : Essentials of Cloud Computing and Security
(2024 Pattern) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates :

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

Q1) a) Explain about Infrastructure and Network level security. **[5]**

b) Define various security services with example. **[5]**

OR

c) What is data security in cloud computing? Explain its significance with examples. **[5]**

d) Describe the CIA Traid. How do these principles ensure data protection in cloud. **[5]**

Q2) a) Differentiate between cloud computing and grid computing. **[5]**

b) Explain the edge computing advantages and challenges with example. **[5]**

OR

c) Explain the steps involved in deploying an application on Google App Engine. **[5]**

d) What are the different types of block chain technology? Explain each with example. **[5]**

Q3) a) Discuss the security and management challenges in multi-cloud environment. **[5]**

b) What is cloud AI? Explain its role in transforming cloud services. **[5]**

OR

c) Book My Show, India's top entertainment platform, faced inefficiencies due to over provisioned on-premises serves and struggled with scalability during peack traffic. How to ensure optimization of infrastructure, cost, scalability and performance.

Solve the above case study with appropriate explanation. **[10]**

P.T.O.

Q4) a) Describe Resource Provisioning in the context of cloud infrastructure. **[5]**

b) How does optimization improve resource utilization and cost management in cloud computing. **[5]**

OR

c) Discuss the challenges associated with data center commoditization and their potential solutions. **[5]**

d) How does resource pooling enhance scalability and flexibility in cloud services? **[5]**

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

a) Application hosting in Azure.

b) Google cloud applications.

c) Challenges & Benefits of cloud migration

d) Key factors for selecting cloud providers.

Total No. of Questions : 5]

SEAT No. : ____

PD-2854

[Total No. of Pages : 2

[6432]-2009
M.C.A. (Management)
AWD565 MJ: Advance Web Development
(2024 Pattern) (Semester - II)

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

Instructions to the candidate:

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

Q1) a) Write a program to create a basic HTTP server using node. js that return "Hello from Node!" **[5]**

b) Write a type script function using generics to reverse an array of any data type. **[5]**

OR

c) Demonstrate the use of Event Emitter in node. js with a working example. **[5]**

b) Create a class in typescript implementing an interface Iperson with properties and method. (if needed assume properties & method) **[5]**

Q2) Solve any two : **[2 × 5 = 10]**

a) Create on angular component for user profile and bind data using one way data binding.

b) Explain SPAs and discuss how angular support SPA development with suitable example.

c) Use the built-in-date pipe to display the current date in various formats inside an angular component template.

P.T.O.

Q3) Solve any two : **[2 × 5 = 10]**

a) Create a service in angular that provides student data and inject it into a component.

b) Implement a login Form using FormGroup with email and Password Fields. Apply required and pattern validation for the password.

c) Explain the difference between promises and observables in angular with an example.

Q4) Solve any two : **[2 × 5 = 10]**

a) Create a basic next. js application that displays a list of books and details on clicking each book.

b) Explain pre-rendering and data feching in next. js with an example.

c) Demonstrate API Routes in Next. js with a post endpoint example.

Q5) Solve any two : **[2 × 5 = 10]**

a) Explain the Node. js process model.

b) Explain angular Routing with example.

c) Discuss Async pipes with example.

d) Explain the dynamic routes in next. js with example.

Total No. of Questions : 5]

SEAT No. :

PD-2855

[Total No. of Pages : 2

[6432]-2010
F.Y. M.C.A.
MANAGEMENT
PBI 566 MJ : Power BI
(2024 Pattern) (Semester - II)

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

Instructions to the candidates :

1) ***Neat diagrams must be drawn wherever necessary.***
2) ***Figures to the right indicate full marks.***
3) ***Assume suitable data, if necessary.***

Q1) **Solve Any Two :**

a) What is Business Intelligence (BI). Explain its key components and benefits. **[5]**

b) What is data modeling? Why is it important in power BI. **[5]**

c) Apply direct query mode in power BI & Compare it with impact mode using real world data set. **[5]**

d) Apply conditional column in power BI to catagorise data based on product data set. **[5]**

Q2) **Solve Any Two :**

a) Analyze the AVARAGE DAX function to calculate the average sales amount per customer. **[5]**

b) Explore the use of slicers and filters in power BI. **[5]**

c) Explore how z-order affects the layering of visuals in power BI and provide an example. **[5]**

d) What is DAX? Explain any four DAX operators. **[5]**

Q3) **Solve Any Two :**

a) Describe any four types of report in power BI with example. **[5]**

b) What are KPI visuals and how are they used in decision making. **[5]**

c) Analyse how the matrix and table present complex data structure in power BI. **[5]**

d) Explore the concept of bookmark & selection pane in power BI. **[5]**

P.T.O.

Q4) **Solve Any Two :**

a) Apply M.Query Syntex to write a function that removes duplicate rows from any data set. **[5]**

b) What is pivoting and upivoting in power BI. **[5]**

c) Implement a custom M function that converts all text values in a column to 1. uppercase 2. lowercase. **[5]**

d) How to handle errors in M code using try.... otherwise construct. Provide an example. **[5]**

Q5) **Solve Any One :**

a) A hospital looking to optimize patient care and treatment using power BI analytics. **[10]**

The hospital faces challenges in tracking patient recovery progress, appointment management and efficient use of doctors and beds.

Create a power BI solution for this problem.

i) Write steps/code to connect with hospital DB (e.g. patient records, appointments, doctor schedules).

ii) Write steps/code to clean the data.

iii) Write 2 DAX measure to analyze recovery rate and appointment delays.

iv) Write 2M queries for sorting patients by severity and merging patient & appointment data.

v) Draw a sample power BI dashboard for the same.

b) How did Tata Consultancy Services (TCS) and ICICI Bank benefited from BI implementation. **[10]**

Total No. of Questions : 5]

SEAT No. :

PD2856

[Total No. of Pages : 2

[6432]-2011
F.Y. M.C.A. (Management)
EIS-567-MJ : ESSENTIALS OF INFORMATION SECURITY
(2024 Pattern) (Semester - II)

Time : 2½ Hours] *[Max. Marks : 50*

Instructions to the candidates:

1) ***All questions are compulsory.***
2) ***Draw neat labelled diagram wherever necessary.***
3) ***Figures to the right indicate full marks.***

Q1) a) What is Information Assurance? Why do we need Information Assurance. **[5]**

b) What is windows firewall? Explain its functions in protecting computer from unauthorized access? **[5]**

OR

c) Differentiate between symmetric and Asymmetric cryptography? **[5]**

d) Explain role and importance of virtualization in information security. **[5]**

Q2) a) Explain various roles of IT auditing in ensuring information security. **[5]**

b) How does information assurance differ from information security? How do both contribute to the overall security posture of an organization. **[5]**

OR

c) Explain the purpose of quantitative risk analysis in information security. **[5]**

d) Explain various IT audit reporting techniques. **[5]**

Q3) a) A growing E-Commerce platform "My Shop", aims to redesign it's information system to handle an increasing customer base, improve operational efficiency and provide a personalized shopping experience. **[7]**

i) What do you think what kind of challenges they are facing.

ii) What kind of security governance should be put in place to ensure secure information system for this E-commerce platform.

b) Write short note on information system development life cycle. **[3]**

OR

P.T.O.

c) A Big Hospital network stores electronic records of 1000 patients. Due to poor information security policy unauthorised employees have been accessing confidential patients data. The hospital is now required to comply with various policies governance and established a strong security governance framework. **[7]**

i) Which application security the hospital implement to protect patient record.

ii) What governance mechanism should be put in place to ensure secure information system for this hospital.

d) Write short note on information security governance. **[3]**

Q4) a) A large scale DDoS attack overwhelmed fastfood's servers, causing it's websites to become inaccessible from more than 60 hours. The attackers used a botnet to flood the site with excessive traffic, preventing legitimate users from making purchases or accessing product information. **[7]**

i) What are the different ways by which this attack is going to live its impact on fastfood's services?

ii) Suggest the concrete security policy to be practiced in the above context.

b) Write a short note on advanced persistent threat. **[3]**

OR

c) A leading bank suffered a data breach where cybercriminals stole sensitive customer data including account details and credit card information. The investigation revealed that attackers exploited weak passwords, unpatched software vulnerabilities, and poor access controls. The bank did not have a robust information security policy in place to prevent such incidents.

i) Which security threats were exploited in this case?

ii) How the bank is going to implement security policy to mitigate future network attacks?

[7]

d) Write a short note on E-mail Security. **[3]**

Q5) a) Demonstrate various safety measures to ensure operating system security in network. **[5]**

b) How the securities in the network ensured using Rootkit and Anti-rootkit tools? **[5]**

OR

c) Illustrate threats to network communication. **[5]**

d) Examine various security parameters for wireless networks. **[5]**

Total No. of Questions : 5]

SEAT No. : ____

PD2857

[Total No. of Pages : 2

[6432]-2012

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

RMW 554 MJ - RM21 : RESEARCH METHODOLOGY

(2024 Pattern) (Semester - II)

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

Instructions to the candidates:

1) ***Draw neat diagram wherever necessary.***
2) ***All Questions carries equal marks.***
3) ***Scientific calculator is allowed.***

Q1) a) Describe research process with suitable diagram in detail. **[5]**

b) Explain importance of Literature review in research. **[5]**

OR

c) Differentiate qualitative and quantitative research methods with suitable example. **[5]**

d) What is Research Methodology? Explain objectives of research. **[5]**

Q2) a) Elaborate types of research with example. **[10]**

OR

b) What is hypothesis? **[5]**

Prepare a hypothesis (null & alternate) for following situations.

i) Researcher wants to understand the impact of social media usage on children's behaviour.

ii) Researcher wants to understand the lectures attended by first-year students and its effect on final exam scores.

c) What are the key components of a well-structured research design? **[5]**

Q3) a) Explain Probability and Non-probability Sampling methods with suitable examples. **[10]**

OR

b) Suppose you are asked to select a sample for is conducting a survey on students' learning habits. Which sampling method would be most suitable and why? What will be sample size for the same? **[10]**

P.T.O.

Q4) a) Discuss Chi - square test. **[10]**

From the following data, find out whether there is any relationship between Gender(Male/Female) & Colour Preferences:

Colour	Males	Females	Total
Pink	10	40	50
Black	70	30	100
Yellow	30	20	50
Total	110	90	200

For the above example Formulate null and alternate hypothesis and apply Chi-square test.

(consider : chi - squared value 0.05 significance level at degree of freedom 2 is = 5.99)

OR

b) What is t-test, When it is used? **[10]**

Determine whether the average weight of sample of 20 mangoes is significantly different from population average weight of 70 gms. The sample mean weight is 70.55gms & sample standard deviation is 2.82 gm.

Apply one sample t test for the above example (consider t value at 0.05 significance =2.093).

Q5) a) Select a research topic within a domain of your choice (e.g., Artificial Intelligence, Machine Learning, Cloud Computing, Internet of Things (IOT), Block Chain, Social Media, Cybersecurity, etc. or any topic).

Prepare a research outline which includes a Title, abstract, introduction, literature review, Objectives, Hypothesis, methodology, results & discussion, conclusion, and references. **[10]**

OR

b) Prepare an outline for a research on topic “Impact of Social Media on Indian Youth” with proper title, objectives, hypothesis, Research Gap, Data Collection, sampling, Result and Discussion and Conclusion. **[10]**

✪ ✪ ✪