Duration: 3hrs **[Max Marks:80]**

N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

1		Attempt any FOUR	[20]
	a	Explain issues in designing Distributed system	
	b	Compare NOS and DOS	
	c	Explain desirable features of global scheduling algorithm	
	d	Explain the need of election algorithm.	
	e	Justify how Ricart-Agrawala's algorithm optimized the Message overhead in achieving mutual exclusion	
2	a	What is Remote procedure call? Explain how transparency is achieved in RPC	[10]
	b	Explain various forms of message oriented communication with suitable example	[10]
3	a	What is logical clock? Why are logical clocks required in distributed systems? How Lamport does synchronizes logical clock? Which events are said to be concurrent in Lamports timestamp	[10]
	b	Explain Chandy -Misra_Hass Algorithm for distributed deadlock detection.	[10]
4	a	Explain different load estimation and process transfer policies used by load balancing algorithms.	[10]
	b	Describe code migration issues in details	[10]
5	a	Discuss and differentiate various client consistency models.	[10]
	b	Explain Absolute ordering and Casual ordering process with the help of example for many to many communication.	[10]
6	a	List desirable features of distributed File system. How are modifications propagated in file caching schemes?	[10]
	b	Discuss Raymonds tree based algorithm of token based in distributed mutual exclusion	[10]

****

Total Marks 80

(3 Hours)

NB

1) Question **number 1** is compulsory
2) Attempt **any three** out of the remaining **five questions**.
3) Assume suitable data if **necessary** and justify the assumptions.
4) Figures to the **right** indicate full marks

Q1 **Attempt any four** 20

a) Explain in brief the objectives of Data Exploration

b) Explain in brief the taxonomy of time series forecasting

c) What are the outliers in the dataset? State the reasons for the outliers occurring in the dataset

d) Explain validation techniques bootstrap and cross-validation

e) State the importance of Data Visualization. State the purpose of scatter plots, quartile plots, bubble charts, density chart

Q2 a) Given data of 10 companies. Find out the type of correlation between advertisement expenses and sales volume using Karl Pearson's coefficient of correlation method 10

Company	1	2	3	4	5	6	7	8	9	10
Advt expenses	11	13	14	16	16	15	15	14	13	13
Sales volume	50	50	55	60	65	65	65	60	60	50

b) Explain the data science process in detail 10

Q3 a) Explain the density-based outlier detection approach 10

b) Explain SMOTE in detail 10

Q4 a) Explain the working of the Auto Regressive Integrated Moving Average Model 10

b) The data given shows salary packages (in lakhs) offered after a campus interview. Find the coefficient of skewness using Bowley's method. 10

Salary	**4-8**	**8-12**	**12-16**	**16-20**	**20-24**
No of Candidates	**4**	**10**	**15**	**8**	**3**

Q5 a) What are the attributes of time series decomposition? Explain the classical decomposition technique 10

b) In certain food experiment to compare two types of baby foods A and B, the following results of the increase in weight (lbs) we observed in 8 children as follows 10

Food A	**49**	**53**	**51**	**52**	**47**	**50**	**52**	**53**
Food B	**52**	**55**	**52**	**53**	**50**	**54**	**54**	**53**

Examine the significance of the increase in weight of children due to food B. (Given t-value at alpha=0.05 is 2.365)

Q6

a) Explain how the time-series approach is used to forecast the demand for a product. 10

b) Explain how predictive modelling can be applied to the House price prediction recommendation 10

(3 Hours) **[Total Marks : 80]**

N.B.:
1. **Question No 1 is compulsory**
2. **Attempt any three questions out of the remaining five**
3. **All questions carry equal marks.**
4. **Assume suitable data, if required and state it clearly.**

Q.1 Solve any four 20 (4x5)

a. Define centrality and its types. How is it computed?

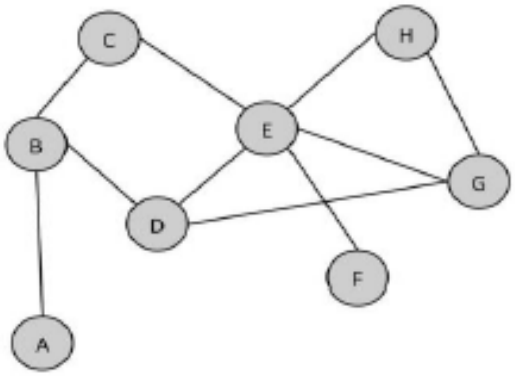
b. Briefly discuss in-links, out-links, and co-links.

c. What is the purpose of search engine optimization?

d. Explain the steps needed to formulate a social media strategy.

e. What are the benefits of social media users who use social media?

Q.2 a. Answer the following questions about this graph. 10



i. How many nodes are in the network?

ii. How many edges are in the network?

iii. Is this graph directed or undirected?

iv. Create an adjacency list for this graph.

v. Create an adjacency matrix for this graph.

vi. What is the length of the shortest path from node A to node F?

vii. What is the largest clique in this network? How many cliques of that size are there?

viii. How many connected components are there in this network?

ix. Estimate the density of the graph?

x. Are there any hubs in the network? If so, which node (s) and why is it a hub?

b. Briefly list and define different actions performed by social media users. 10

Q.3 a. Discuss and differentiate social media texts. 10

b. Discuss business data-driven location analytics and social media data-driven location analytics? 10

Q.4 a. Explain the two main categories of search engine analytics. 10

b. Explain common social media risks-mitigation strategies. 10

Q.5 a. Briefly explain the seven layers of social media analytics. 10

b. Explain the ways to measure the success of a company having social media. 10

Q.6 Write short notes on any two 20 (2x10)

a. Main challenges to social media analytics.

b. Sources of Location Data.

c. Traditional Vs social Recommendation Systems.

d. Issues with the privacy policies.

[Time: 3 **Hours]** **[Marks:80]**

N.B: 1. **Questions No. 1 is Compulsory.**
2. **Attempt any three out of remaining Questions.**
3. **Figures to the right Indicate full marks.**

Q.1 Attempt any Four write short notes on **20**

a) Significance of Environment

b) Global Warming

c) Scope of Environment Management

d) EMS certification

e) Forest Act

f) Eco-system and its types

Q.2 a) Discuss on environmental issues related to Indian context. **10**

b) Discuss on Air [P & CP] Act **10**

Q.3 a) Explain limiting factor and food chain as related to ecosystem. **10**

b) Write a note on each. Ozone layer depletion & Acid rain. **10**

Q.4 a) Discuss on corporate environment responsibity. **10**

b) What is sustainable development? What are the parameter effecting it? **10**

Q.5 a) What is ISO-14000? How does adoption of ISO-14000 practices benefits industries as well Environment. **10**

b) Discuss the functions of government as planning and regulatory agency. **10**

Q.6 a) Discuss the Atomic and Biomedical hazards as related to Global environmental concern. **10**

b) Discuss on Total Quality environmental management. **10**

———————————-