Time:(3 Hours) **marks:80**

N.B: 1) Question **number 1** is compulsory.

2) Attempt **any three** out of the remaining.

3) Assume suitable data if **necessary** and justify the assumptions.

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

Q 1

A Explain how Monotonic read consistency model is different than Read your Write consistency model [5]

B What is 1:M and M:1 group communication? [5]

C Differentiate between NOS DOS and Middleware in the design of distributed systems [5]

D What is fault tolerance? Explain failure models. [5]

Q 2

A Explain code migration and its techniques. [10]

B Explain Bully election algorithm with suitable example. [10]

Q 3

A Explain Raymond's algorithm for mutual exclusion. [10]

B What are different data centric consistency models [10]

Q 4

A Explain different load estimation and process transfer policies used by load balancing algorithms. [10]

B What are physical clocks? Explain any one physical clock synchronization algorithm. [10]

Q 5

A What are different issues and goals related to distributed systems? [10]

B Explain file caching schemes [10]

Q 6

A Write a short note on Replication and the types of it. [10]

B What is RPC? Explain working of RPC in detail [10]

Time: 3hours **Marks: 80**

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 Answer the following **20**

a) Explain the significance of data science considering Volume and Dimensions of Data.

b) Explain performance evaluation with respect to Time series forecasting

c) Write a note on measure of spread

d) Write a note on Applications of Data Science

Q2 **a)** Explain Cross Validation, K-fold cross validation in detail **10**

b) Explain the Data Science Process in detail **10**

Q3 **a)** What is Data Visualization? What is Multivariate data? Explain with an example Scatter plot. **10**

b) What are Outliers and their Causes? Can Statistics be used to detect Outliers if yes, Explain. **10**

Q4 **a)** Explain SMOTE in detail **10**

b) Calculate the Bowley's coefficient of skewness from the following distribution. **10**

Income	NO. of persons
30 - 40	8
40 - 50	24
50 - 60	48
60 - 70	68
70 - 80	30
80 -90	13
90 - 100	9

Q5 **a)** Explain Smoothing methods in Time Series Forecasting **10**

b) A stenographer claims that she can type at the rate of 120 words per minute. Can we reject her claim on the basis of 100 trails in which she demonstrates a mean of 116 words with a standard deviation of 15 words? Use 5 % level of significance, $Z_\alpha = 1.96$. **10**

Q6 **a)** What are Recommendation engines? Explain. **10**

b) Time series analysis using linear regression **10**

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Duration: - 3 Hours **Marks: 80 Marks**

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. Explain hyperlink Analytics?
b. Specify the significance of Social Media KPI
c. Differentiate between static and dynamic social media text.
d. Explain the steps needed to formulate a social media strategy.
e. Explain The benefits of brand building.

Q.2 **a.** Explain the two main categories of search engine analytics. **10**
b. What is text analytics, and Explain the steps in text analytics with an example. **10**

Q.3 **a.** Explain briefly the seven layers of social media analytics with examples. **10**
b. What is a social media-based recommendation system and how does it differ from a traditional recommendation system? **10**

Q.4 **a.** What is search engine optimization? What are the different methods to do it? **10**
b. What is social media risk? Explain the four steps in social media risk management **10**

Q.5 **a.** Explain various issues addressed in privacy policy **10**
b. What is Location analytics? Explain its significance in context of social media analytics? **10**

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

a. Challenges of social media analytics
b. Social Media Action analytics
c. Types of Social media risk
d. Intention analysis in social media.

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