

Duration: 3 Hours

Total Marks: 80

N.B.: (1) Question No.1 is **Compulsory**.

(2) Attempt **any three** questions from the **remaining** questions.

(3) Assume **suitable** data wherever required but **justify** the same.

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

(5) Answer each new question to be started on a **fresh page**.

1. (a) Explain various Digital Driven process used in Technology. (5)
(b) Explain concept of infallibility in financial and banking operation. (5)
(c) Explain how profiling Enterprise software used in Fin and Banking Enterprises. (5)
(d) Explain Markov Regime Switching Model (5)
 2. (a) Describe CAPM Model in detail along with its component (10)
(b) Explain with example how Sharpe Ratio can be used to evaluate income statement growth. (10)
 3. (a) What is the Wishart distribution, and how is it related to covariance matrices? (10)
(b) How can regression analysis be used to relate sparsity in undirected graphs to financial portfolio performance on a yearly basis? (10)
 4. (a) 1)Why is it important for a prediction-based trading strategy to accurately forecast large market movements? (5)
2)What is vectorization in the context of backtesting trading strategies? (5)
(b) Explain the differences between Stop Loss (SL), Trailing Stop Loss (TSL), and Take Profit (TP) orders in trading, and provide an example scenario for each. (10)
 5. (a) Explain the steps involved in the K-means clustering Algorithm with example. (10)
(b) What is the relationship between prior and posterior distributions in Bayesian analysis? (10)
 6. (a) 1)What are two commonly used representations for deploying fraud analytics models. (5)
2)Discuss the Advantages and Limitation of Glasso Penalization (5)
(b) Explain Traffic light indicator in detail ? How does the traffic light indicator approach help in the representation of fraud analytics model outcomes? (10)
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[Duration: 3 hrs]

[Max Marks: 80]

- NB: (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.

- Q1. ATTEMPT ANY FOUR [20]
- a. Differentiate between Generative Adversarial Network and Variational Auto Encoder.
 - b. Explain Sparse autoencoders.
 - c. What are the benefits of pre-trained models?
 - d. Explain Random Forest algorithm.
 - e. Explain the limitations of 2D learning environments.
- Q2. a. Elaborate on the architecture and challenges of training GANs, particularly focusing on issues like training instability and mode collapse. [10]
- b. A patient goes to the doctor for a medical condition, the doctor suspects three diseases as the cause of the condition. The three diseases are D1, D2, D3, which are marginally independent from each other. There are four symptoms S1, S2, S3, S4 which the doctor wants to check for presence in order to find the most probable cause of the condition. The symptoms are conditionally dependent to the three diseases as follows: S1 depends only on D1, S2 depends on D1 and D2. S3 is depends on D1 and D3, whereas S4 depends only on D3. Assume all random variables are Boolean, they are either 'true' or 'false'. [10]
- i. Draw the Bayesian network for this problem.
 - ii. Write the expression for the joint probability distribution as a product of conditional probabilities.
 - iii. What is the number of independent parameters required to describe this joint distribution?
- Q3. a. Explain transfer learning. Describe different types of transfer learning. [10]
- b. Explain WGAN in detail. [10]
- Q4. a. Explain Variational Auto Encoders in detail. [10]
- b. Explain AdaBoost in detail. [10]
- Q5. a. Explain Gaussian Mixture Models. [10]
- b. Explain Conditional GAN in detail. [10]
- Q6. a. What is metaverse? Explain the characteristics and components of the metaverse. [10]
- b. Explain Hidden Markov Models. [10]

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- N.B. (1) Question one is Compulsory.**
(2) Attempt any 3 questions out of the remaining.
(3) Assume suitable data if required.

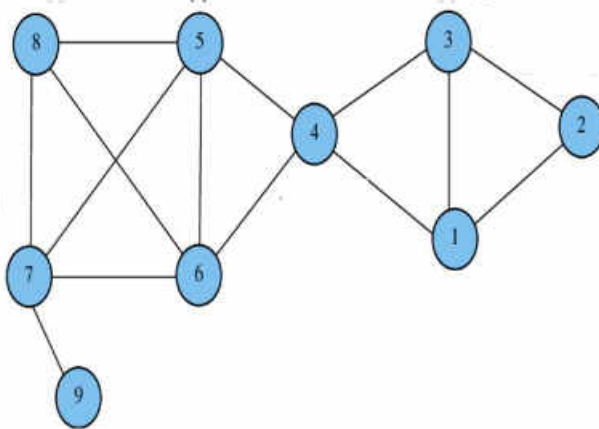
Q. 1 Answer any 4

- (a) Differentiate between social media analytics and Traditional Business Analytics. **05**
- (b) Explain the core characteristics of Social Media. **05**
- (c) Explain how social media is the beneficial for the business growth. **05**
- (d) Explain Tie-Strength in social media network structure. **05**
- (e) Explain the four steps in social media risk management. **05**

Q. 2 a) What are different social media KPIs. **10**

b) Explain in detail seven layers of social media analytics. **10**

Q.3 a) Social media network structure is given below. Answer the given questions. **10**



- i) Create an adjacency matrix and adjacency list for this graph.
- ii) Find the degree centrality of each node of the network. Find the Central node of the network.
- iii) Draw the 1.5 egocentric network for node 4.
- iv) Find the density of the graph.
- v) What is the length of the shortest path from node 2 to 7.
- vi) What is the largest clique in this network? How many cliques of that size are there?

b) Explain steps for Text Analytics. Explain static and dynamic text analytics. **10**

- Q.4 a) Compare Traditional recommendation system and Social Recommendation System. **10**
- b) Explain different Challenges for Social Media Analytics. **10**
- Q. 5 a) Elaborate on Social media issues and privacy policies. **10**
- b) What is social media Hyperlink analytics. Explain different types of hyperlink analytics. **10**
- Q.6 Write short notes on **any 4**. **20**
- a) Types of Search engines
 - b) Sources of Location data
 - c) Applications of Social Media Analytics
 - d) Collaborative Filtering for recommendation
 - e) Social media text analytics tools
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(3 Hours)

[Total Marks:80]

N.B. 1) Question No. 1 is compulsory.

- 2) Attempt any three questions from the remaining questions.
- 3) Figures to right indicates full marks.
- 4) Assume suitable data, if necessary.

Q1. Write short notes on the following (Any Four) **20**

- i. Triple constraints in Project Management
- ii. Project charter and Project sponsor
- iii. Project Management Information system
- iv. Goldratt's critical chain methods
- v. Project audits

Q.2 (a) Explain stages of team development and growth. What are the advantages of effective team and barriers to team effectiveness? **10**

(b) A project is composed of 8 activities, the time estimate for which are given below. **10**

Activity	Predecessor	Duration		
		t_o	t_m	t_p
A	-	2	4	12
B	-	10	12	26
C	A	8	9	10
D	A	10	15	20
E	A	7	7.5	11
F	B, C	9	9	9
G	D	3	3.5	7
H	E, F, G	5	5	5

Z	Probability (P)
0	0.5
0.5	0.6950
1	0.843

- (i) Draw the network diagram.
- (ii) Find the critical path and expected projected duration.
- (iii) Calculate the standard deviation and variance of the project.
- (iv) What is the probability of completing the project on 30-week deadline?

Q.3 (a) Explain work breakdown structure and Gantt chart with example. **10**

(b) A project requires an initial investment of Rs. 200000 and it is expected to generate a cash flow of Rs. 10000 for 3 years. The target rate of return of the project is 12% per annum. Calculate the net present value of the project. **05**

(c) Explain non numeric project selection models. **05**

- Q.4** (a) Explain top down and bottom-up budgeting. **05**
(b) What is the difference between resource loading and resource leveling? **05**
(c) Describe probability and impact matrix. Explain risk response strategies for positive and negative risks. **10**
- Q.5** (a) A project in its 20th week has an actual cost of Rs. 250,000. It was scheduled to have spent Rs. 241,000. For the work performed to date, the budgeted value is Rs. 252,000. What are the cost and schedule variances for the project? What are the SPI and CPI? **05**
(b) Describe Earned value management technique in Project Management. **05**
(c) Explain Project Procurement Management. What is the difference between contracting and outsourcing? **10**
- Q.6** (a) Explain multicultural and virtual projects. **05**
(b) Why is ethics important in Project management? **05**
(c) What is project termination? Explain different types of project terminations. **10**

(Time: 3 Hours)

(Total Marks: 80)

Note:

1. Question No.1 is compulsory.
2. Attempt any **three** out of the remaining **Five** questions.
3. Assume suitable data if necessary.

- Q. 1.** Answer **any FOUR** of the following: (20)
- (a) Define Environmental Objective as per ISO 14001
 - (b) What are the challenges in implementation of ISO 14000 standards?
 - (c) Unawareness or ignorance of environmental protection will lead to detrimental consequence comment. Justify the statement.
 - (d) Write short note on Global Warming as a Global Environmental Concern.
 - (e) Discuss on Applications of Environmental Management System..
 - (f) Discuss the key success factors for applied to almost all the operation for EMS implementation.
- Q. 2.** (a) What is Water (P & CP) Act? Give its objectives. (10)
- (b) Discuss in short about Environment Protection Act. (10)
- Q. 3.** (a) Discuss roles of Government as regulatory agency for Environmental Management. Enlist 3 points. (10)
- (b) Explain limiting factors and carrying capacity as related to Ecosystems. (10)
- Q. 4.** (a) What is Total Quality Environment Management Concept? (10)
- (b) How is CSR related to Environmental Management? Explain with an example. (10)
- Q. 5.** (a) Elaborate the ISO 14001 EMS Model for Municipalities. (10)
- (b) Discuss in short about EMS certification. (10)
- Q. 6.** Answer the following (20)
- (a) Discuss on Wildlife protection Act.
 - (b) What are the guidelines to conduct and Environmental audit?