Time: 3-hour   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.
(5) Notations carry the usual meaning.

Q1. Answer the following (Any FOUR).   [20M]

   a) Explain the triple constraint in Project Management.

   b) Explain the Stages of team development & growth.

   c) Explain the work breakdown structure (WBS).

   d) Explain Goldratt's critical chain.

   e) Explain the earned value management technique for measuring the value of work.

   f) Explain multicultural and virtual projects.

Q2. (a) ABC Industries has a potential project with an initial cost of Rs. 20,00,000. The capital budget allows to accept only one project. Using the NPV method, which project should be selected?   [10M]

Cash Flows (Year)	Project A	Project B	Project C	Project D
1.	6,00,000	5,00,000	10,00,000	3,00,000
2.	6,00,000	5,00,000	8,00,000	5,00,000
3.	6,00,000	5,00,000	6,00,000	7,00,000
4.	6,00,000	5,00,000	4,00,000	9,00,000
5.	6,00,000	5,00,000	2,00,000	11,00,000
Discount Rate	9%	6%	15%	22%

Q2. (b) Discuss why project management is essential in today's business environment. What benefits does it provide in achieving organizational goals?   [10M]

Q3. (a) Explain Risk response strategies for positive and negative risks.   [10M]

Q3. (b) What is the importance of vendor documents? How the vendor documents should be preserved?   [10M]

Q4. (a) The R & D project has a list of tasks to be performed whose time estimates are given in the table below. [10M]

Activity	Predecessor Activity	t_o	t_m	t_p
A	-	2	4	6
B	A	3	6	9
C	A	8	10	12
D	B	9	12	15
E	C	8	9	10
F	D, E	16	21	26
G	D, E	19	22	25
H	F	2	5	8
I	G	1	3	5

1. Draw the project network.
2. Find the critical path.
3. Find the time required to complete the following project and the critical activities.

Q4. (b) Explain the aggregate project plan used in the portfolio process. [05M]

Q4. (c) Explain the project buffer. [05M]

Q5. (a) Explain the project management template with a sample template sheet. [10M]

Q5. (b) Define Project Management Information Systems (PMIS) and evaluate its role in the successful execution of complex projects [05M]

Q5. (c) Write a short note on the GANTT chart. [05M]

Q6. (a) Why meetings are useful in project monitoring? What rules should be followed to maximize the effectiveness of meetings? [10M]

Q6. (b) List and briefly describe the ways projects may be terminated. What are some non-technical reasons for project termination? [10M]

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3 Hours   **Total Marks: 80**

Note:
1. Question number one is compulsory
2. Solve any 3 out of remaining five
3. Figures to the right indicates full marks

Q1	a	What is the significance of the action space in reinforcement learning?	05
	b	What is the role of the learning rate in updating action-value estimates?	05
	c	How do rewards drive the agent's behaviour toward achieving its goals?	05
	d	What is the exploration-exploitation trade-off in reinforcement learning?	05

Q2. a How can you implement asynchronous updates in a reinforcement learning **10** algorithm?

   b You are using Q-Learning to optimize your strategy for playing a slot **10** machine with 3 arms. How would you initialize your Q-values and update them based on the rewards received over 100 plays?

Q3 a Imagine you're designing a simple game where a player controls a character **10** to navigate through a maze to reach a treasure chest. The player receives a reward of +5 points upon reaching the treasure chest and -1 point for each move taken. Assume the player starts at the entrance of the maze.
   i. If the player reaches the treasure chest in 5 moves, what is their total reward?
   ii. What is the maximum possible reward the player can earn, assuming they take the fewest number of moves to reach the treasure chest?
   iii. If the player gets stuck in the maze and takes 15 moves to reach the treasure chest, what is their total reward?

   b Explain the components of an MDP in detail. **10**

Q4 a What are the challenges of applying Q-Learning to large-scale problems, and **10** how can they be mitigated?

   b What are the main components of GPI? Give an example of a reinforcement **10** learning algorithm that uses GPI.

Q5 a What are the challenges in implementing job-shop scheduling in a real-world **10** scenario?

   b What are gradient bandit methods, and how do they differ from action-value- **10** based methods?

Q6 a How does policy evaluation differ in deterministic and stochastic **10** environments?

   b What is the purpose of an action-value function Q(s,a) in reinforcement **10** learning?

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Time: 3 Hours   Max. Marks: 80

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) Explain the need of social media analytics.   05

   (b) Explain different types of social media Analytics with examples.   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) Explain different Challenges for Social Media Analytics.   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
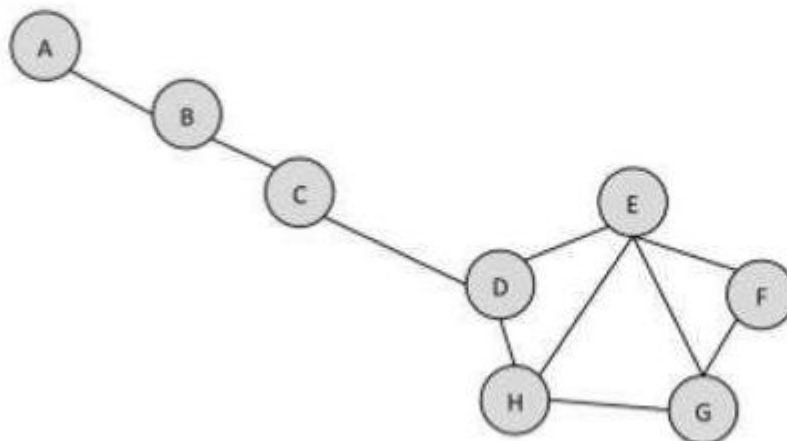
   i) Create an adjacency matrix and adjacency list for this graph.
   ii) Find the connectivity of the Network.
   iii) What is the Degree distribution for the above graph?
   iv) Draw the 1.5 egocentric network for node D and G.
   v) Find the density of the graph.
   vi) What is the length of the shortest path from node A to G?
   vii) Find the betweenness centrality of node E.

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

Q.4 a) What are different social media KPIs. **10**

b) Explain social media action Analytics and Hyperlink Analytics. **10**

Q. 5 a) Elaborate on Social media issues and privacy policies. **10**

b) What is social media Location Analytics and Search Engine analytics **10**

Q.6 Write short notes on **any 4** **20**

a) Applications of Social Media Analytics
b) Collaborative Filtering for recommendation
c) Difference between social media analytics and Traditional Business Analytics
d) Social Media Analytics tools
e) Degree Centrality and Closeness centrality