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Bengaluru

Mid Term Examinations - October 2026

Date: 05/10/2026 **Time:** 11:45 AM - 01:15 PM

Course Code: CSD3445 **Course Name:** Social Media Analytics

Semester: Seventh Semester **Max. Marks:** 50 **Weightage:** 50%

CO - Levels	CO1	CO2
Marks	34	56

PART A: Answer Following Questions. 10 M

Q.N.	Questions	M	CO	BT
1	Define the term social media ecosystem. List any two of its key components.	2	CO1	BT1
2	Differentiate between reach and impressions as social media metrics.	2	CO1	BT2
3	Define degree centrality of a node. How is it normalised for a network of n nodes?	2	CO2	BT1
4	What is a community in a social network? Name any two community detection approaches.	2	CO2	BT1
5	What is link analysis? Mention one application of link analysis in social networks.	2	CO2	BT2

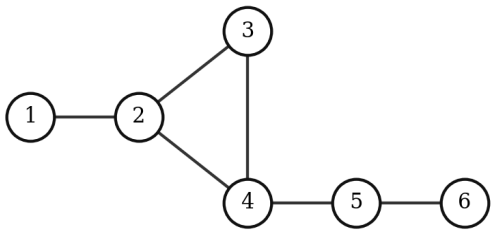
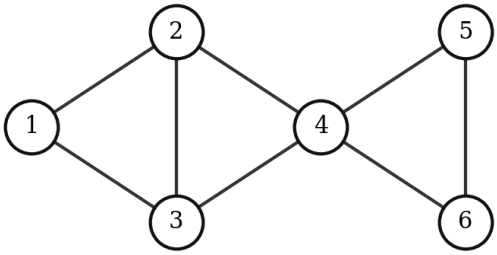
PART B : Answer Any 1 Following Questions. 10 M

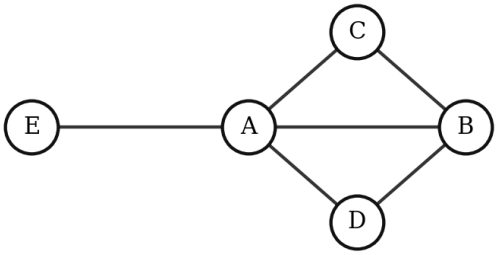
Q.N.	Questions	M	CO	BT
6	(a) Explain user behaviour analytics and its role in understanding users on social media platforms. *[5 M]* (b) Distinguish between individual behaviour analysis and collective behaviour analysis with suitable examples. *[5 M]*	10	CO2	BT2
7	(a) Explain the characteristics of online community behaviour, including participation inequality among lurkers, contributors and leaders. *[5 M]* (b) Discuss how community participation patterns help in building social intelligence. *[5 M]*	10	CO2	BT2

PART C: Answer Any 1 Following Questions. 10 M

Q.N.	Questions	M	CO	BT
8	(a) Classify social media metrics into awareness, engagement and conversion metrics, giving two examples of each. *[4 M]* (b) Two paid campaigns are run on a platform. Use: CTR , Conversion rate, CPC, Cost per conversion . **Campaign** / **Spend (₹)** / **Impressions** / **Clicks** / **Conversions** X / 20,000 / 4,00,000 / 8,000 / 400 Y / 30,000 / 5,00,000 / 7,500 / 600 (i) Compute all four measures for both campaigns. *[4 M]* (ii) Compare the campaigns and recommend one, with justification. *[2 M]*	10	CO1	BT3

9	(a) Explain any five techniques used for social data visualization (for example bar charts, line charts, word clouds, heat maps and network graphs) and state when each is suitable. *[5 M]* (b) Choose the most suitable visualization for each task and justify your choice: *[5 M]* (i) Daily post volume over one month. (ii) Most frequent hashtags in a discussion. (iii) Who-follows-whom relationships among 50 users. (iv) Comparison of engagement rate across five platforms. (v) Activity level by hour of day and day of week.	10	CO1	BT3

PART D: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
10	(a) Explain degree, closeness and betweenness centrality and state what each measures in a social network. *[3 M]* (b) For the undirected graph shown below, compute the normalised degree centrality and the normalised closeness centrality of all nodes. (Normalised closeness = (n − 1) ÷ sum of shortest-path distances to all other nodes.) *[5 M]*  (c) Compute the betweenness centrality of node 4 (unnormalised) and justify why it is the most critical node. *[2 M]*	10	CO1	BT3
11	(a) Explain the two phases of the Louvain (modularity-based) community detection method. *[4 M]* (b) For the graph shown below (m = 8 edges), compute the modularity of the following two partitions using $Q = \Sigma c\ [\ Lc/m - (dc/2m)^2\ ]$, where Lc = edges inside community c, dc = sum of degrees of nodes in c and m = total edges:  P1: {1, 2, 3} and {4, 5, 6} *[3 M]* P2: {1, 2}, {3, 4} and {5, 6} *[2 M]* (c) State which partition represents the better community structure. *[1 M]*	10	CO2	BT3

PART E: Answer Any 1 Following Questions. 10 M				
Q.N.	**Questions**	**M**	**CO**	**BT**
12	(a) Analyse how social networks evolve over time by explaining densification, shrinking diameter, preferential attachment and triadic closure. *[6 M]* (b) The network shown below has 5 users. A new user F joins and creates one link using preferential attachment, where P(i) = ki ÷ Σkj.  *Network for Q.12* (i) Compute the degree of each existing node and the probability that F links to each of them. *[2 M]* (ii) Explain the effect of this rich-get-richer behaviour on the degree distribution. *[2 M]*	10	CO2	BT4

13	(a) Explain relationship mining and tie strength. Distinguish between strong and weak ties. *[4 M]* (b) Monthly interaction counts between five users are: A–B = 40, A–C = 5, A–D = 25, B–C = 30, C–D = 2, D–E = 12. Rule: 20 or more = strong tie, 6 to 19 = moderate tie, 5 or less = weak tie. (i) Classify each tie as strong, moderate or weak. *[2 M]* (ii) Compute the weighted degree (total interaction strength) of each user and identify the most interactive user(s). *[2 M]* (iii) Identify the user whose removal would disconnect the network and justify your answer. *[2 M]*	10	CO2	BT4