

**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)**

III - B.TechII-Semester Regular Examinations (BR23), MAY - 2026

RECOMMENDER SYSTEMS (CSE-AI&DS, AI&ML)

Time: 3 hours

Max. Marks: 70

*Question Paper consists of Part-A and Part-B
Answer ALL the question in Part-A and Part-B*

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) What is matrix transpose?	(2M)	CO1	1
b) What is personalization?	(2M)	CO1	1
c) What is preprocessing?	(2M)	CO2	1
d) Define collaborative filtering.	(2M)	CO2	1
e) Define content-based filtering.	(2M)	CO3	1
f) What is constraint-based recommendation?	(2M)	CO3	1
g) Define hybrid recommender system	(2M)	CO4	1
h) What is switching method?	(2M)	CO4	1
i) What is social tagging?	(2M)	CO5	1
j) Define trust in recommender systems.	(2M)	CO5	1

PART-B (5X10 = 50M)

2a. Explain rating data and its importance.	5(M)	CO1	2
b. Analyze how sparsity in rating matrices affects recommendation quality.	5(M)		4
(OR)			
3 Apply linear algebra concepts such as matrix operations and covariance to represent and analyze rating data in recommender systems.	10(M)	CO1	3
4a. Differentiate between user-based and item-based filtering.	5(M)	CO2	2
b. Describe model-based collaborative filtering.	5(M)		2
(OR)			
5 Apply user-based collaborative filtering with an example.	10(M)	CO2	3
6a. Explain item profile representation.	5(M)	CO3	2
b. Explain knowledge-based recommender systems.	5(M)		2
(OR)			
7 Analyze the working of content-based recommender systems with respect to user profiles.	10(M)	CO3	4
8a. Discuss advantages of hybrid approaches.	5(M)	CO4	2
b. Describe monolithic hybridization techniques.	5(M)		2
(OR)			
9 Apply monolithic, parallel, and pipelined hybridization methods on any example.	10(M)	CO4	3

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|------|--|-------|-----|---|
| 10a | Describe error metrics used in evaluation. | 5(M) | CO5 | 2 |
| b. | Discuss user-centred evaluation metrics. | 5(M) | | 2 |
| (OR) | | | | |
| 11 | Design an evaluation framework for a recommender system using historical datasets and metrics. | 10(M) | CO5 | 5 |
