

School of Computer Science and Engineering
Fall Semester 2024-25

CAT I

SLOT: AI+TAI

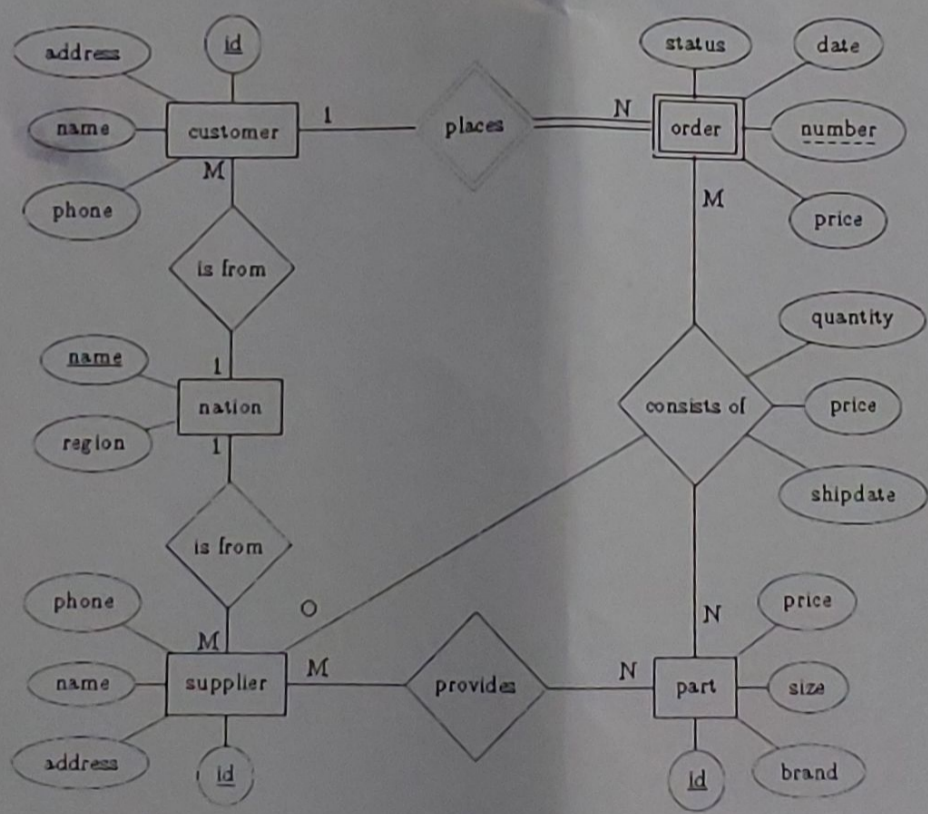
Programme Name & Branch: B.Tech CSE and CSE Specializations

Course Name & Code: Database Systems - BCSE302L

Exam Duration: 90 Min.

Maximum Marks: 50

- | Q. No. | Question | Max Marks |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1. | Present the various users of the DBMS environment and their interactions with the components of the DBMS modules with a neat diagram. | 10 |
| 2. | a. How do different schema languages support the architecture? What kind of architecture is followed to support the present DBMS requirements? Explain each level with an example. [6 Mark]
b. Compare: Physical data independence and logical data independence. [4 Mark] | 10 |
| 3. | Convert the following ER to Relational Model | 10 |



4. a. Consider the following data values for the relation 'Product' and 'Purchase_order'. 10

Product

<u>P_id</u>	Description
1	Dell USB drive 8GB
	iphone 6 plus 128GB
2	Windows 10
3	Wireless Keyboard

Purchase_order

<u>Purchase_id</u>	Purchase_date	P_id	Quantity
P101	30-Aug-2017	1	2
P104	01-Aug-2015	4	7
P106	28-Jul-2015	3	6

Do these relations satisfy all the constraints? If not discuss the constraint violations in detail. [5 Mark]

b. Consider the state mentioned below and identify whether disjoint or overlapping constraint will be used. Justify your answer. [5 Mark]

- i. Consider a super class 'account' with sub classes 'Savings Account' and 'Current Account'. The account can either be Savings or Current. It can't be both at the same time.
 - ii. Consider a super class 'Person' and subclasses 'Customer' and 'Employee'. In this case, a person can be Customer and Employee both.
5. Consider the restaurant management relation mentioned below. This relation is used to store data about the restaurant's employees but has few issues in design. Normalize it till 3NF. 10

emp_id	name	job_code	job	state_code	home_state
E001	Arun	J01	Chef	KA	Karnataka
E001	Arun	J02	Waiter	KA	Karnataka
E002	Tej	J02	Waiter	KE	Kerala
E002	Tej	J03	Cashier	KE	Kerala
E003	Suganya	J01	Chef	KE	Kerala