UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Database Management Systems **Semester: I**
Program: BCA **Time : 03 hrs.**
Course Code: CSBC 1012 **Max. Marks: 100**

Instructions: Attempt all questions.

SECTION A
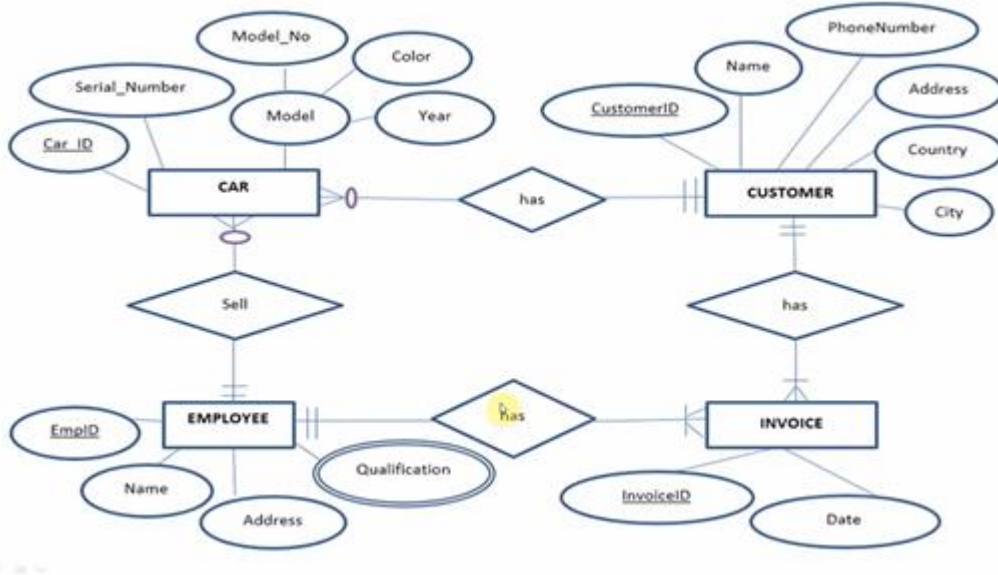### (5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Write about Informal Design guidelines for relational Schemas.	4	CO4
Q2	Differentiate: a) Strong and weak entity b) Key attribute and derived attribute	4	CO2
Q3	Give an example of each: a) insert anomaly b) Update anomaly	4	CO3
Q4	Write an SQL query to perform multi-table join (three tables).	4	CO4
Q5	List the salient characteristics of the database.	4	CO1

SECTION B
(4Qx10M= 40 Marks)

Q 6	a) Why Do We Carry out Database Normalization? b) "BCNF is stricter normal than 3NF." Explain.	5+5	CO3
Q 7	Briefly write about two alternatives for specifying structural constraints on relationship types specifying the advantages and disadvantages of each.	10	CO2
Q8	Consider the following relational database schema consisting of the four relation schemas: passenger (pid, pname, pgender, pcity) agency (aid, aname, acity) flight (fid, fdate, time, src, dest) booking (pid, aid, fid, fdate) Answer the following questions using relational algebra queries. a) Get the details about all flights from Chennai to New Delhi. b) Find only the flight numbers for passengers with PID 123 for flights to Chennai before 4/4/2022. c) Find the passenger names of passengers who have bookings on at least one flight. d) Find the passenger names for those who do not have any bookings for any flights.	10	CO3

	e) Find the agency names for agencies that are in the same city as a passenger with passenger id 123.		
Q 9	a) Study the following ER diagram and convert it into relations, mentioning primary and foreign keys in the relations. b) We can convert weak entity sets to strong entity sets by simply adding appropriate attributes. Why then do we have weak entities? Give reasons.	8+4	CO2

SECTION-C
(2Qx20M=40 Marks)

Q 10	a) "The insert operation can violate domain constraint, key constraint, entity integrity constraint, and referential integrity constraint." Explain. Also, support your explanation with examples. b) Discuss six major steps that you would take in setting up a database for an enterprise.	10+ 10	CO3, CO1
Q 11	**Consider the following two tables (EMP and DEPT) and write SQL queries.** **EMP TABLE**	20	CO4

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
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7369	SMITH	CLERK	7902	17-DEC-80	800		20
7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
7566	JONES	MANAGER	7839	02-APR-81	2975		20

7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
7698	BLAKE	MANAGER	7839	01-MAY-81	2850		30
7782	CLARK	MANAGER	7839	09-JUN-81	2450		10
7788	SCOTT	ANALYST	7566	09-DEC-82	3000		20
7839	KING	PRESIDENT		17-NOV-81	5000		10
7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
7876	ADAMS	CLERK	7788	12-JAN-83	1100		20
7900	JAMES	CLERK	7698	03-DEC-81	950		30
7902	FORD	ANALYST	7566	03-DEC-81	3000		20
7934	MILLER	CLERK	7782	23-JAN-82	1300		10

DEPT TABLE

DEPTNO	DNAME	LOC
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10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	OPERATIONS	BOSTON

1. List the details of the emps whose Salaries are more than the employee BLAKE.
2. List the emps whose Jobs are the same as ALLEN.
3. List the Emps whose Salary is the same as FORD or SMITH in desc order of Sal.
4. List the employees whose Jobs are the same as MILLER or Sal more than ALLEN.
5. Find the highest-paid employee in the sales department.

OR

Q 11'	Consider the employee and department tables above and write the SQL queries for: 1. List the Dept. no. where there are no employees. 2. List the No. of employees and Avg salary within each department for each job.

	3. Find the maximum average salary drawn for each job except for 'President'. 4. List the department details where at least two employees are working. 5. List the no. of emps in each department where the no. is more than 3.		