Name: **Enrolment No:**	

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

Course: Database Management Systems — **Semester: II**
Program: MCA — **Time : 03 hrs.**
Course Code: CSEG — **Max. Marks: 100**

Instructions:

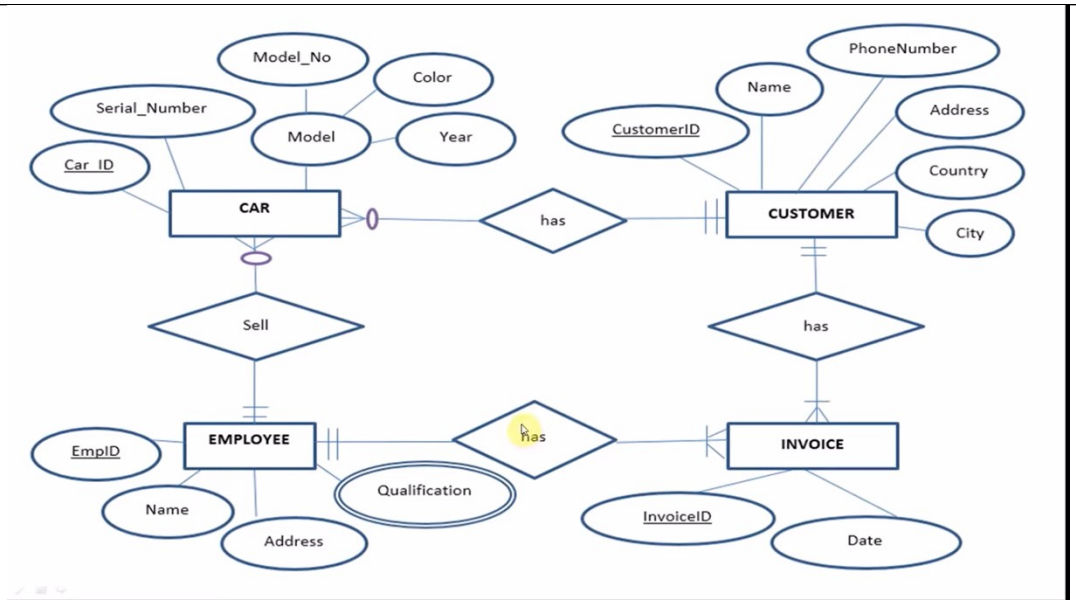
SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Write the advantages of the DBMS approach over the conventional file system.	**4**	**CO1**
Q 2	"Three schema architecture has been Proposed to support DBMS characteristics of Program-data independence and Support of multiple views of the data." Explain	**4**	**CO1**
Q 3	Give an example of each: a) Delete anomaly b)Update anomaly	**2+2**	**CO2**
Q 4	a) From the following table, write a SQL query to find the Nobel Prize winner(s) in the year 1970. Return year, subject and winner. b) Write a SQL query to find the Nobel Prize winner in 'Literature' in the year 1971. Return winner. *Sample table: nobel_win* YEAR SUBJECT WINNER COUNTRY CATEGORY ---- ---------- ---------- ---------- ---------- 1970 Physics Hannes Alfven Sweden Scientist 1970 Physics Louis Neel France Scientist 1970 Chemistry Luis Federico France Scientist 1970 Physiology Ulf von Euler Sweden Scientist 1970 Physiology Bernard Katz Germany Scientist	**2+2**	**CO3**
Q 5	Give an account of various problems of concurrency control along with an example for each stated problem.	**4**	**CO4**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Consider a relation schema R (A, B , C, D) with the following functional dependencies- A → B B → C C → D	**10**	**CO4**

	$D \rightarrow B$ Determine whether the decomposition of R into R1 (A , B) , R2 (B , C) and R3 (B , D) is lossless or lossy.		
Q 7	"File organization is used to describe the way in which the records are stored in terms of blocks, and the blocks are placed on the storage medium." Explain. Also, write about any two types of file organization techniques.		**CO2**
Q 8	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 passenger with pid 123 for flights to Chennai before 4/4/2022. c) Find the passenger names for passengers who have bookings on at least one flight. d) Find the passenger names for those who do not have any bookings in any flights. e) Find the agency names for agencies that are located in the same city as a passenger with passenger id 123.	**10**	**CO3**
Q 9	Design an E-R diagram for keeping track of the exploits of your favorite sports team. You should store the matches played, the scores in each match, the players in each match, and individual player statistics for each match. Summary statistics should be modeled as derived attributes. Extend the E-R diagram to track the same information for all teams in a league **OR** Study the following ER diagram and convert it into relations, mentioning primary and foreign keys in the relations.	**10**	**CO2**



SECTION-C
(2Qx20M=40 Marks)

Q 10

a) For the example below we have one big table. Put the table in normalized form.

OID = Order ID, O_Date= Order Date, CID = Customer ID, C_Name = Customer Name, C_State = Customer's State, PID = project id, P_Desc =Project Name, P_Price = Product Price, Qty = Quantity Purchased

Note: 7, 5, 4 means three Product IDs. Similarly, 1, 1, 5 means three Quantities.

Functional Dependencies are: OID -> O_Date CID -> C_Name PID -> P_Desc PID -> P_Price OID -> CID CID -> C_State PID and OID -> Qty

OID	O_Date	CID	C_Name	C_State	PID	P_Desc	P_Price	Qty
1006	10/24/09	2	Apex	NC	7, 5, 4	Table, Desk, Chair	800, 325, 200	1, 1, 5
1007	10/25/09	6	Acme	GA	11, 4	Dresser, Chair	500, 200	4, 6

b) Discuss deadlock detection in DBMS. Consider the following sequence of transactions and check for a deadlock using wait for graph:
T1 Read(X)
T2 Read(Y)
T1 Write(X)
T2 Read(X)
T3 Read(Z)
T3 Write(Z)
T1 Read(Y)
T3 Read(X)

CO4 +CO 5

	T1 Write(Y)		
Q 11	a) Using implicit cursor update the salary by an increase of 10% for all the records in the EMPLOYEES table, and finally display how many records have been updated. If no records exist display the message "None of the salaries were updated". b) WAP to accept the employee_id and display all the details of employees. If the employee does not exist display the appropriate message OR a) Using explicit cursor fetch the employee name, employee_id, and salary of all the records from the EMPLOYEES table. b) Using an explicit cursor Insert the records from the EMPLOYEES table for the columns employee_id, Last_Name, and salary for those records whose salary exceeds 2500 into a new table TEMP_EMP		**CO5**