(Please write your Enrollment Number) Enrollment No._____

Supplementary Examination- ONLINE MODE
(CBCS)
< B.Tech CSEAI > <___2__ SEM>
(Feb, 2022)

Subject Code: BAI-106	**Subject:** Database Management Systems
Time : 1 Hours 15 Minutes	**Maximum Marks :** 30
Note: Q. 1 is compulsory. Attempt any one question from the rest.	

Q1 **(15)**

Consider the following table:
FACULTY (faculty_id, fname, basic_pay, joiningdate, designation, deptid),
DEPARTMENT(deptid, dname, hod)
Write SQL statements for the following:

i) Add Primary Key and Foreign Key to both the tables appropriately.
ii) To display the name of all the faculty members who are getting top two basic_pay.
iii) To display those employees who have their joining dates on Sunday
iv) To display the department where there is no faculty member working so far
v) Delete all the values from Designation Column in DEPARTMENT table

Q2 **(15)**

Consider a situation that you are working as a software professional in an IT Company and IGDTUW has approached you to develop a system to automate its academic system. The following information is provided to you:

IGDTUW is running various UG/PG and PhD programs under different departments. Like, Department of IT is running BTech – IT (duration 4 years), MTech – IT (2 years), MCA (2 years) and PhD (3 years) programs. Every department is having full time and visiting faculty members for teaching different subjects in these programs. All the programs are having a fixed teaching scheme which has subject code, subject name and Lectures per Week for every subject. Every year, students are enrolled in these programs and are identified by their Enrolment Number.

Design an ER Diagram for the above situation by clearly depicting Cardinality, Optionality, appropriate attribute categories, and extended ER features (specialization/generalization). Document all these points separately also for getting clear picture.

Q3 **(10,5)**

(a) Write a Trigger which will restrict the data entry on Sunday in the FACULTY table. For data entered on other days, it should give a message "Congratulations for entering new faculty member".

(b) **List all functional dependencies satisfied by the following relation R.**

A	B	C	D
a1	b1	c1	d2
a1	b2	c2	d2
a2	b2	c2	d3
a2	b3	c2	d3
a2	b3	c2	d3

DBMS (END-TERM)

(a) A University wants to launch various new programs through e-learning mode. These programs are for any student who is unable to attend the regular programs. User can join multiple programs at a particular time. Every program is having a fixed duration (in hours) and has several modules/Chapters to be taught by faculty members. At the end of each module, there is an online quiz. If a candidate clears all the quizzes of all the modules with a stipulated grade, he/she will be awarded a Certificate for the program.

Analyze the situation with various assumptions related to the database design and then and then draw the ER Diagram. Clearly indicate the entities, attributes (along with their types), relationships and key constraints.

(b) Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold: {A–>B, BC–> D, E–>C, D–>A}. Write the candidate keys and possible primary Key of R?

(a) Consider the following table:

EMPLOYEE (empid, ename, salary, joiningdate, designation, deptid),

DEPT(deptid, dname)

PROJECT(pid, pname, p_details, deptid)

Write SQL queries for the following:

(i) To display top two salaries.

(ii) To display the name of the employees who are getting highest salaries in their departments.

(iii) To display those employees who have their joining dates on Sunday

(iv) To display the name of those employees who are getting more salary then the average salary of PHYSICS department.

(v) To display the Department name where maximum number of employees are working.

(b) Comment on Atomicity and Consistency aspect of a transaction. Why we require Schedule in Transaction Management?

DBMS (MID-TERM)

Branch	Program	Specialization	Duration	HoD
CSE	BTech	CSE	4	A
CSE	MTech	AI	2	A
IT	BTech	IT	4	B
IT	MTech	ISM	2	B
IT	MCA	IT	2	B
MAE	BTech	MAE	4	C
MAE	MTech	MAE	2	C
ECE	BTech	ECE	4	D
ECE	MTech	ECE	2	D

Identify all functional dependencies in the above table. Also check whether the table is in 3rd Normal Form. Provide the justification for Yes/No. Identify the candidate key and Primary Key also.

You have to work on designing an ER Diagram for developing a database for Indian Premier League Cricket tournament. It has teams for different cities who participate in the Tournament like Delhi Capitals, Mumbai Indians, Sunriser Hyderabad etc. Each team has a teamID, name, hist_city. Each team has many players and each player belongs to only one team. All these players have distinct IDs, their name, their Date of Birth, Country they belong to and Jersey number.

Teams play matches in the city belonging to one of the team. For example, if a match is between Delhi Capitals and Mumbai Indians then the match will either be played at Delhi or at Mumbai. If match is at Delhi, then Delhi Capitals will be the host team and Mumbai Indian s will be the guest Team.

For every match, we need to keep track of the date, the teams which are playing the match, the result, the performance of each player (Runs made, No. of 4s, No. of 6s, Catch, Wicket etc.)

State all the other assumptions you have in your mind which affect the design. Clearly mention the key attribute for each entity set along with cardinalities of the relationship.

PLs specify which all tables will be created to design the above database. Write the SQL syntax for creating any two tables with proper constraints (Primary Key, Foreign Key, Check etc).