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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR THE DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
DIT 1007 – DATABASE MANAGEMENT SYSTEMS

Date: 11TH APRIL 2022
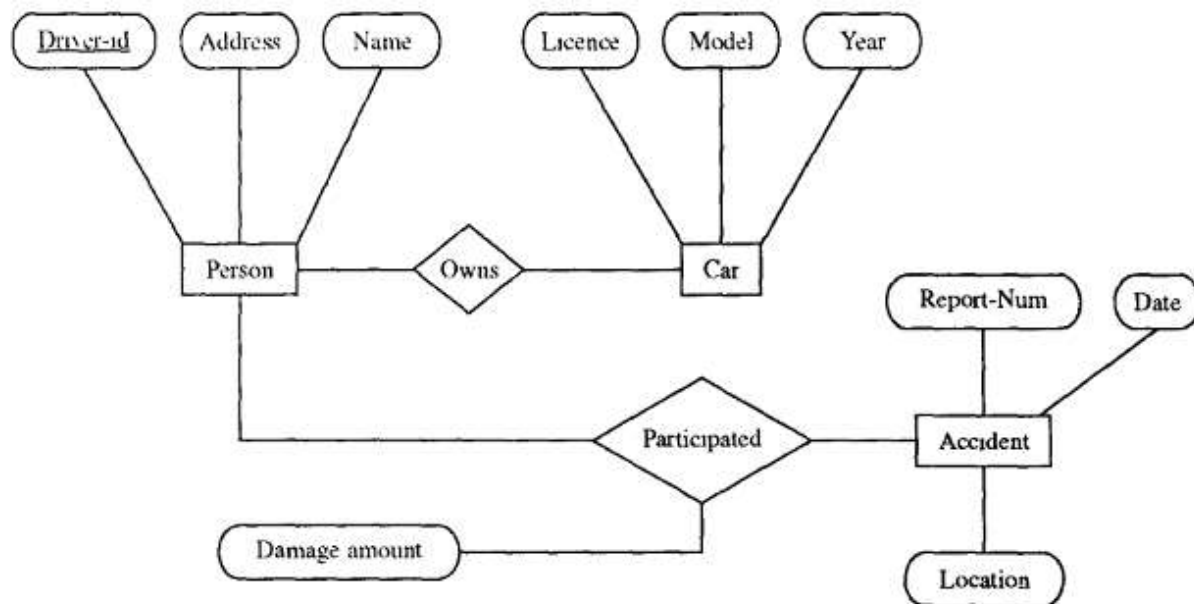Time: 2:30PM – 4:30PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Draw the E-R diagram of the registration process of the student in a particular course. (6 Marks)
b) Define the term functional dependency stating any four types of dependency   (6 Marks)
c) When designing a DBMS explain what is meant by the term Schema.   (2 Marks)
d) Define the following terms as used in database management systems: (6 Marks)
    i.   Tuple
    ii.   Referential Integrity
    iii. Foreign Key
e) Using relational algebra format, write down how to select the employee tuples who's:
    i.   DEPT_NO is 10
    ii.   SALARY is greater than 80,000   (6 Marks)
f) Describe how Database management applications can be used in the Banking sector   (4 Marks)

QUESTION TWO (20 MARKS)

a) Differentiate between DDL and DML.   (4 Marks)
b) Design a relational data base corresponding to E-R diagram given   (8 Marks)

c)   With the aid of diagrams, explain any four types of relationships in relation to entity relationship
        diagram   (8 Marks)

QUESTION THREE (20 MARKS)

a)   Consider the following table Doctor and answer the following Queries in SQL   (10 Marks)

ID	Department	OPD Days	Doctor Name	Fee
H201	ENT	MWF	Akaash Arora	400
H308	Oncology	TTS	Dharma Sharma	600
H907	Paediatrics	MWF	Sanjay Singh	500
H896	ENT	TTS	Praveen Sethi	400
H675	Gynecology	TTS	Kavita Sharma	450
H357	Haematology	MWF	Dinesh Chaudhry	600

        i)   To display the name of all Doctors who visit OPD on 'MWF'
        ii)   To display the all the details of Doctors whose Department ends with 'y'
        iii)   To count the Number of Doctors in ENT Department
        iv)   To display names and the fee of doctors in the descending order of fee
        v)   To add a new column Phone No to a table Doctor

b)   The table below shows data in a 2nd normal form. Use it to answer the question that follows.
                                                                                            (8 Marks)

EMP_ID	EMP_NAME	EMP_ZIP	EMP_STATE	EMP_CITY
222	Harry	201010	UP	Noida
333	Stephan	02228	US	Boston
444	Lan	60007	US	Chicago
555	Katharine	06389	UK	Norwich
666	John	462007	MP	Bhopal

        Normalize the table to 3NF
c)   Explain the importance of data backup in an organization   (2 Marks)

QUESTION FOUR (20 MARKS)

a)   Explain three limitations of file-based systems   (6 Marks)
b)   With the use of diagram, differentiate between the Two-Tier and Three-Tier Architecture of
        DBMS.   (8 Marks)
c)   Elucidate the term Data Independence while expressing its two levels?   (6 Marks)

QUESTION FIVE (20 MARKS)

a)   Outline four anomalies that are eliminated by normalization   (8 Marks)
b)   Daisy works in a company that would like to automate their processes. You are part of the ICT
        personnel in the company and your team is tasked to advise the company on the best DBMS
        architecture to adopt. With the aid of a well labelled diagram, describe three possible DBMS
        architectures that your team can think of.   (12 Marks)