Nov – Dec 2024   Jan-Feb 25

(B. Tech) Program: Computer Engineering Scheme III:

Supplementary Regular Examination: SY Semester: III

Course Code: CEC303 and Course Name: Database Management System

Date of Exam: 29-01-25   Duration: 02.5 Hours   Max. Marks: 60

CEC303

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain in detail data independence with diagram and example.		CO1	U
b)	Differentiate between generalization and specialization with examples.		CO2	U
c)	Explain the importance of primary, foreign, and candidate keys with example		CO3	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Explain referential integrity with syntax and example		CO4	U
b)	Define Normalization. Differentiate between 2NF and 3NF with example		CO5	U
c)	Explain transition state diagram with example		CO6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		
a)	Analyze below ER model and convert it into Relational Model. Relational model should include: Mapping of strong and weak entity (03 Marks) Mapping of 1:1, 1:N, M:N cardinality (03 Marks) Mapping of relationships (02 Marks) Mapping of Specialization/ Generalization/ Aggregation (02Marks)		CO3	Ap

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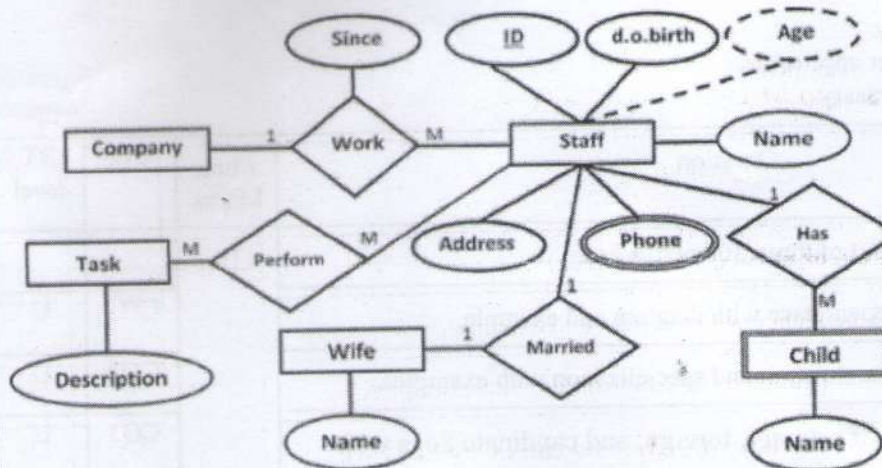
		CO	
b)	Write SQL queries for the following database. Employee(eid,ename,street,city) Works(eid,cid,salary) company(cid,cname,city) 1)Modify database so that Jack now lives in "Mumbai" 2)Give all employees of "ANZ' corporation a 10% raise in salary 3)find all employee id who live in the same cities as the company for which they work 4) Give total number of employees 5) Find highest paid employee	CO4	Ap
c)	A schedule has transaction T1,T2,T3 Given below	CO6	Ap

T1	T2	T3
r(x)		
	r(z)	
r(z)		
		r(x)
		r(y)
w(x)		

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			w(y)
	r(y)		
	w(z)		
	w(y)		

Solve following
i) Draw precedence graph (02M)
ii) Is schedule conflict serializable or not? Find respective serial schedule (03M)
iii) Is above schedule view serializable or not? (05M)

Q.4	Solve any **two** questions out of three. (10 marks each)	20		
a)	A publication may be a book or an article. Articles are published in journals. Publication has title and location. Book having their title and category. Article includes title, topic and date. Publication is written by authors whose name, address, mobile number are stored. Publication also belongs to particular subject which has their name. Construct an EER model which should include: 1. Different types of attributes (02 M) 2. Relations (02 M) 3. Cardinality Constraint (02 M) 4. Participation Constraint (02 M) 5. Specialization/ Generalization/ Aggregation (02 M)		CO2	Ap
b)	i) Consider given relation R(A,B,C,D,E,F) having set of FD's: $A \to B$, $A \to C$, $C \to D$, $B \to E$, $AC \to F$ Calculate attribute closures $\{A\}+$, $(B)+$ and $\{AC\}+$ along with all possible candidate keys (05 M) ii) Consider given relation R(A,B,C,D,E,F) having set of FD's: $A \to B$, $A \to C$, $BC \to D$, $B \to E$, $BC \to F$, $AC \to F$ Calculate some members of axioms as below: $A \to E$, $BC \to DF$, $AC \to D$, $AC \to DF$ (05 M)		CO5	Ap
c)	i) Explain Timestamp ordering protocol with example (05M) ii) Explain following relational algebra operations with example(05M) a) Projection b) Cartesian Product		CO6 CO3	U

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