Sample Question Format

KIIT Deemed to be University
Online Mid Semester Examination(Spring Semester-2022)

Subject Name & Code: DBMS & CS-2004
Applicable to Courses: B.Tech CSE, IT, CSSE and ESCE

Full Marks=20 **Time:1 Hour**

SECTION-A(Answer All Questions. All questions carry 2 Marks)

Time:20 Minutes **(5×2=10 Marks)**

Question No	Question Type(MCQ/SAT)	Question	Answer Key(if MCQ)	CO Mapping
Q.No:1 (a)		A data dictionary doesn't provide information about A. Data location B. Ownership of the data C. Disk size D. None of these	C	
		Hierarchical model is based on ___ structure. A. Linked list B. Tree C. Graph D. None of these	B	
		_____ is not the responsibility of DBA. a. Back-up of database b. User management c. Data authorization d. None of these	D	
		The distinguishable parts of a record are linked to A. Columns B. Rows C. Files D. None of these	A	
Q.No:1 (b)		In a hospital, a doctor may treat many patients. However, a patient can be treated by only one doctor. Further, every patient must be assigned to a doctor however the same is not mandatory for every doctor. Which one of the following correctly represents the cardinality and participation for the relationship between faculty and course? a) 1:1, total, partial	C	

		b) 1:1, partial, partial c) 1:M, partial, total d) 1:M, total, partial		
		A departmental store maintains a database to store the details of its customers, products, and vendors. A Customer can purchase many products. Similarly, a product can be sold to many customers. Every vendor must supply at least one product to the store whereas every product must be supplied by at least 1 vendor. Which one of the following statements is TRUE? a) The cardinality of purchase relationship is 1:M b) The cardinality of purchase relationship is M:N c) The participation of Vendor entity type is partial. d) The participation of Product entity type is partial.	**B**	
		A shipping portal allows a sailor to book a boat for some purpose. Each sailor has a unique id, name, age, gender, and rating. Similarly, each boat consists of a unique id, color, and type. The portal maintains a reservation table to store the details of booking made by any sailor for a boat. The reservation tables consist of the attributes like sailor id, boat id, price of booking, and booking date. Which one of the following is not true about the above scenario? A. Sailor id is the primary key of sailor table. B. Boat id is the primary key of boat table. C. Both sailor id, and boat id are the foreign key in the reservation table. D. Either Sailor id or boat id individually can be the primary key of the reservation table.	D	
		Which is correct? I. NULL value is an entry in all the domains. II. All candidate keys are not super keys. III. Surrogate keys are same as foreign keys. A. I B. II C. III D. All	A	
Q.No:1 (c)		Which is not correct? I. For M:N relationship, primary key	C	

		of the relationship set consists of the union of the primary keys of the entity sets. II. For 1:M relationship, primary key of the relationship set is the primary keys of the many side entity. III. For 1:1 relationship, primary key of the relationship set consists of the union of the primary keys entity sets. A.I B.II C.III D.None		
		Which is correct? I.If every entity must participate in the relationship, then participation of the entity set in that relationship type is total. II.The partial key of a weak entity set is not same as a discriminator. III.Generalization is same as specialization. A.I B.II C.III D. None	A	
		I.In disjoint constraint, an entity belong to only one lower-level entity set. II.ER model is that it cannot express relationship among relationships. III.Foreign key cannot be represented in ER diagram. Which is correct? A.I B.II C.III D.All	D	
		Which one of the following option is correct consider the following statements. (i) An attribute of an entity can be multi-valued in ER model. (ii) In a row of a relational table, an attribute cannot have NULL value. (iii)Composite attribute is same as multi-valued attribute. (A) i (B) ii (C) iii (D) None	A	

Q.No:1 (d)		Which among the following is correct? I. Cartesian product includes all the possible combinations of tuples from both relations. II. Division operation is the not reverse of the Cartesian product operation. III. Difference operation is used to identify the rows that common to both relations. A. I B. II C. III D. None	A	
		Which of the following is correct? I. In the inner join, tuples with NULL valued does not appear in the result. II. Natural join is same as self join. III. Natural join operation is not needed for outer join. A. I B. II C. III D. ALL	A	
		I.NULL value will not participate in the aggregate functions. II.In theta join, cardinality of result is greater than product of cardinality of two relations. III. Self join in similar to theta join. Which is not correct? A.I B.II C.III D.None	C	
		I. Relational calculus is a procedural language. II.A variable is said to be bind in an atomic formula if it does not contain an occurrence of a quantifier. III.Domain variables are the ones which range over the underlying domains instead of over the relations. Which is correct? A.I B.II C.III D.None	C	
Q.No:1 (e)		The SELECT statement, that retrieves all the columns from empinfo table name starting with d to p is ..... A. SELECT ALL FROM empinfo WHERE	D	

		ename like '[d-p]%'; B. SELECT * FROM empinfo WHERE ename is '[d-p]%'; C. SELECT * FROM empinfo WHERE ename like '[p-d]%'; D. SELECT * FROM empinfo WHERE ename like '[d-p]%';		
		Find the names of these cities with temperature and condition whose condition is neither sunny nor cloudy A. SELECT city, temperature, condition FROM weather WHERE condition NOT IN ('sunny', 'cloudy'); B. SELECT city, temperature, condition FROM weather WHERE condition NOT BETWEEN ('sunny', 'cloudy'); C. SELECT city, temperature, condition FROM weather WHERE condition IN ('sunny', 'cloudy'); D. SELECT city, temperature, condition FROM weather WHERE condition BETWEEN ('sunny', 'cloudy');	A	
		Which of the following option is correct if you wish to modify the "FirstName" column in "Employee" table from "Alex" to "Alec". A. UPDATE Employee SET FirstName = 'Alec' WHERE FirstName = 'Alex' B. UPDATE Employee SET FirstName = 'Alec' INTO FirstName = 'Alex' C. UPDATE Employee where FirstName = 'Alec' WHERE FirstName = 'Alex' D. UPDATE Employee having FirstName = 'Alec' WHERE FirstName = 'Alex'	A	
		For the command: Select substr('Education',4) from dual; Select the correct output form the following options: A. tion B. cation C. Educ D. The command will generate error	B	

SECTION-B(Answer Any One Question. Each Question carries 10 Marks)

Time: 30 Minutes **(1×10=10 Marks)**

Question No	Question	CO Mapping
Q.No:2	A. Suppose you have a classical music collection consisting audio songs and video songs, and you want to build a database that will let you find which recording you have for a specific composer (e.g. A.R. Rahman), or singer (e.g. Kumar Sanu), or film (e.g. Dangal) etc. Take necessary assumptions and draw an ERD for this database. (4 marks) B. Convert the ER model to relational model (3 marks) C. "An entity set can be better expressed in relationship set in some scenario". True or false? Justify your answer with example. (3 marks)	
Q.No:3	Student(sid, sname, cgpa, age) Professor(pid, pname, subject) Teach(sid, pid) Write the queries in tuple relational calculus and domain relational calculus. A. Find the name of the students who has cgpa greater than 9.0 and age less than 20. B. Find the name of the professor who is teaching the subject DBMS as well as OS. C. Find the name and id of the students who have taken the subject machine learning as well AI. D. Find the name of students who are taken atleast 2 subject. E. Find the id and name of professor who is teaching atleast 2 subject.	
Q.No:4	Attend Choice I **OR** Choice II Choice I: Consider the following relational database schema: STUDENT(rollno,name,age,cgpa,address,semester,gender, class representative) Write the following queries in SQL and relational algebra. A. Display the rollno, name, for all male students either in semester 1 or 2 and have cgpa above 9.0. B. Display the details of the student above 20 years of age and belongs to 'Bhubaneswar'. C. Display the rollno, name, and semester of students whose name contains 'Z' and male student. D. Display the rollno of the students who are not class representative. E. Display the details of the students who have highest cgpa for all semesters. **OR** Choice II: A. Prove the three fundamental Armstrong's axioms.	

(4 marks)

B. Let R(UVXY) be a relation schema with a set of functional dependencies, F={UV → X, U → V, VY → XU, Y → X}. Compute a canonical cover of F. Show the intermediate steps of your derivation. (6 marks)

Q.No:5

A. Draw ER Diagram for a **bank database**, following are the requirements:

- Each bank has a unique code, name and address.
- Each bank has one or more branches, each of which has a branch_number and address.
- Each bank branch has zero or more loans and zero or more accounts.
- Each account has a unique account number, type and balance. It is related to exactly one bank_branch and to atleast one customer.
- Each loan has a unique loan number, amount and type. It is also related to exactly one bank_branch and to at least one customer.
- Each customer has a unique SSN, name, address and phone and is related to zero or more accounts and zero or more loans.

(7 marks)

B. Convert the ER model to relational model. (3 marks)

Q.No:6

Suppose there are two relations A and B

Relation A:

X	Y
Φ	a
Φ	b
Φ	c
ϵ	a
ϵ	b
Ω	a
Ω	b
Π	a

Relation B

Y
a
b

A. What will the resulting relation of A ÷ B contain**?**
B. Write the syntax for the query
   Tuples that are present in A but not in B.
   Also write the resulting relation that will be obtained.
C. What will be the resulting table for A left outer join B.
D. What are the tuples of (A-(A-B)) resulting table?
E. What will be the tuples of resulting table for A natural join B?

Q. No:7

Attend Choice I **OR** Choice II

Choice I:

Consider the table LAPTOP (model, Processor, RAM, manufacturing date, price).
Write the SQL statement for the queries given below.
A. Display the details of the LAPTOP where L comes in the middle of model name.
B. Display the model of the LAPTOP where price is between 30000 to 100000.
C. Display the RAM from LAPTOP where price is NULL.
D. Display the details of LAPTOP where price is 30000/40000/50000.
E. Group the models of LAPTOP according to the price.

OR

Choice II:

A. There is a relation R(A,B,C,D,E,F,G).

Consider the following functional dependencies
AB ->CD, AF->D, DE->F, C->G, F->E, G->A
Find the candidate keys.

B. There is a relation R(X,Y,Z)
The following is the instance

X	Y	Z
a	d	b
a	e	c
a	f	c
c	g	b

Find from below functional dependencies, which are correct and which are wrong.
XY->Z
Z->Y
YZ->X
Y->Z
X->Z
XZ->Y
Y->X

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