VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Code No. : 14665 O

Accredited by NAAC with A++ Grade

B.E. (I.T.) IV-Semester Backlog Examinations, July-2023

Database Management Systems

Time: **3 hours**

Max. Marks: **60**

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	List any three Database applications.	2	1	1	1
2.	Define Super Key.	2	1	1	1
3.	What is the use of group by clause?	2	1	2	1
4.	What are aggregate functions? And list different aggregate functions.	2	1	2	1
5.	Illustrate fully functional dependency with example?	2	2	3	1
6.	List the steps involved in JDBC-ODBC connection setup.	2	1	3	1
7.	Write the advantages of concurrent execution in transactions.	2	1	4	1
8.	Define a checkpoint?	2	1	4	1
9.	State the purpose of Thomas write rule.	2	2	5	1
10.	Define timestamp based protocol?	2	1	5	1

Part-B (5 × 8 = 40 Marks)

		M	L	CO	PO
11. a)	How database Management systems are efficient compared to file systems.	3	2	1	1
b)	Draw an Entity Relationship diagram for the Airlines database. Include the attributes and relationships. Indicate Key and participation constraints.	5	3	1	2
12. a)	**Authors** (author_id, first_name, last_name, country, birth_year) **Books** (title, author_id, publication_year) **Nobel_Winners** (author_id, award_year) Write the SQL Queries to compute the following queries (i) List the Last names of Nobel prize winners from Japan (ii) List the pairs of author-ids from the same country such that one of them won the Nobel Prize and the other did not. (iii) List the pairs of authors-id, both of whom are born after 1920. Only list each pair once	5	3	2	2
b)	Explain different joins in SQL with example.	3	2	2	1

			M	L	CO	PO

13.	a)	Consider the following relational schemes for a library database:
		Book (Title, Author, Catalog_no, Publisher, Year, Price)
		Collection (Title, Author, Catalog_no)
		The following are functional dependencies:
		  a. Title Author --> Catalog_no
		  b. Catalog_no --> Title,Author,Publisher,Year
		  c. Publisher,Title,Year --> Price
		  d. Assume {Author, Title} is the key for both schemes. Apply the appropriate normal form for Book and Collection?
			5	4	3	2

	b)	Explain Cursors with an example program.	3	3	3	2
14.	a)	List ACID properties and illustrate its significance along with an example.	4	2	4	1
	b)	Compare and Contrast Static Hashing with Dynamic Hashing?	4	2	4	1
15.	a)	What is Two phase locking protocol?How it guaranties the serializability property?	5	3	5	2
	b)	Explain Deadlock prevention techniques with example.	3	2	5	1
16.	a)	What is a Weak Entity Set? Explain with example.	3	2	1	1

	b)	Consider the following relations:
		Doctor(SSN, FirstName, LastName, Specialty, YearsOfExperience, PhoneNum)
		Patient(SSN, FirstName, LastName, Address, DOB, PrimaryDoctor_SSN)
		Medicine(TradeName, UnitPrice, GenericFlag(T\F))
		Prescription(Prescription Id, Date, Doctor_SSN, Patient_SSN)
		Prescription_Medicine(Prescription Id, TradeName, NumOfUnits)
		
		Write the relational algebra expressions that computes the following queries
		  (i) List the trade name of generic medicine with unit price less than Rs 50.
		  (ii) List the first and last name of patients whose primary doctor named 'Ram Mishra'.
		  (iii) List the first and last name of doctors who are not primary doctors to any patient
			5	3	2	2

17.		Answer any *two* of the following:				
	a)	Illustrate the significance of Triggers with an example program.	4	3	3	2
	b)	Illustrate the significance of Serializability with an example.	4	2	4	1
	c)	Explain Log based recovery with an example.	4	2	5	1

M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	40%
iii)	Blooms Taxonomy Level – 3 & 4	40%

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