VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade

B.E. (C.S.E./AIML) IV-Semester Advanced Supplementary Examinations, September-2022

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.	What are the responsibilities of Database Administrator?	2	1	1	1,2
2.	Define partial and total participation of constraints.	2	1	1	1,2
3.	Define candidate key, foreign key in a relational database.	2	1	2	1,2
4.	List the aggregate operators used in SQL.	2	1	2	1,2
5.	What is a trigger and write how to specify it.	2	1	3	1,2
6.	Find candidate keys of the following relation Relation: R (ABCDE) Functional Dependencies: F= {A→B, BC→E, ED→A}	2	3	3	1,2,3
7.	Write Differences between B-Tree Indexing and B+ Tree Indexing.	2	2	4	1,2
8.	What is Stable storage? Give one Example for stable storage.	2	1	4	1,2
9.	What is Thomas write rule and where is it used?	2	2	5	1,2
10.	How check points can be used in log records?	2	3	5	1,2
	Part-B (5×8 = 40 Marks)				
11. a)	How database Management systems are efficient compared to file systems.	4	2	1	1,2
b)	Draw an ER diagram for the following Health care-Pharmacy database	4	3	1	1,2,3
	The database needs to record the following information – Patients, identified by SSN, Name, address, age. Doctors, identified by SSN. For each doctor, name, specialty &years of experience must be recorded. Every patient has a primary physician; every doctor has at least one patient. Each Pharma company is identified by name and has a phone number. For each drug, the trade name & formula must be recorded. Each drug is produced by a pharma company & the trade name identifies a drug uniquely from among the products of that company. Each pharmacy has a name, address & phone no. Each pharmacy sells several drugs & has a price for each. A drug could be sold at several pharmacies and price could vary from one pharmacy to another. Doctors Prescribe drugs for patients. A doctor could prescribe one or more drugs for several patients and a patient could obtain prescriptions from several doctors. Each prescription has a date & a quantity associated with it.				
12. a)	Explain the different Set operations used in SQL.	4	2	2	1,2

			M	L	CO	PO
	b)	Consider the following Library relational DataBase Users (<u>UserNo:integer.</u>, UserName:string, hometown:string) Books (<u>BookNo:integer</u>, BookTitle:string, Author:string) Issued(<u>BookNo:integer, UserNo:integer</u>, day:date) Write the queries in **Relational Algebra** for the following (i) Find the names of users who belong to hometown 'Hyderabad' (ii) Find book titles which are issued to user with Userno 1234 (iii) Count the number of books issued to each user (iv) Find the names of users who have been issued at least one book	4	3	2	1,2,3
13. a)	What are Functional Dependencies and their uses? Give suitable examples	4	2	3	1,2
b)	What are the various Integrity Constraints and write how to specify them in SQL	4	3	3	1,2
14. a)	What is a Transaction Explain properties of a transaction?	4	2	4	1,2
b)	How to check Conflict serializablity of a given schedule explain using suitable example.	4	3	4	1,2
15. a)	What is Two-phase locking protocol? How it guaranties the serilizability property?	4	3	5	1,2
b)	What is Deadlock? Explain Deadlock prevention schemes.	4	1	5	1,2
16. a)	Write about Generalization and specialization in E-R model.	4	2	1	1,2
b)	Consider the following relational schema Employee(<u>eid: integer</u>, ename:string, designation: string, sal:real, did: integer) Department(<u>did:integer</u>, dname:string, location:string, manager_id:integer) Write the following queries in SQL (i) Write a query to display all department names and manager names of those departments (ii) Find names of all employees who work in same department as some employee named 'venu' (iii) Find salary of lowest paid employee for each department (iv) Increment salaries of employees by 1000, who are working in department with name 'HR'	4	3	2	1,2,3
17.	Answer any *two* of the following:				
a)	How Boyce-Codd Normal Form is different from 3NF?	4	3	3	1,2
b)	Compare static hashing and dynamic hashing.	4	2	4	1,2
c)	Explain Data base modification techniques used in log based recovery.	4	2	5	1,2

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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