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NIST INSTITUTE OF SCIENCE & TECHNOLOGY
(Autonomous)



B. Tech 3 rd Semester (2022Batch)				Branch(s)	CSE/IT/CST/ECS
Subject Code	22CS3PC01T/ 22IT3PC01T/ 22CT3PC01T/ 22ELC3PC01T	Subject Name		Database Engineering	
Time	90 min	Exam	Mid Semester	Max. Marks	50
Examination Superintendent		Prof. Chittaranjan Biswal			
Name of the Instructor(s)		Prof. Susmita Mahato, Prof. Pragyan Dash, Prof. Nibedita Mohapatra, Prof. Santosh Kar, Prof. Ruchika Padhi			
Date of Examination		25/11/2023	Sitting	2 nd	

Answer Question No.1 from PART-I which is compulsory, any four from PART-II and any one from PART-III.

The figures in the right hand margin indicate marks.

PART-I

(Answer all the questions)

Q1.	CO	Level	Level-1: Knowledge Level-4: Analysis	Level-2: Comprehension Level-5: Synthesis	Level-3: Application Level-6: Evaluation	2 X 5
(a)	2	2	Write the syntax for SELECT and DELETE statement in SQL. (Give an example.)			
(b)	1	2	Define schema and instance. Give an example			
(c)	1	2	Explain responsibilities of DBA.			
(d)	2	2	What is a weak entity? Explain with example			
(e)	3	1	Advantages of Normalization.			

PART-II

(Answer Any Four questions out of six)

Q2.		CO	Level	Level-1: Knowledge Level-4: Analysis	Level-2: Comprehension Level-5: Synthesis	Level-3: Application Level-6: Evaluation	4 X 6
	(a)	1	3	Differentiate between DDL and DML commands.			
	(b)	2	3	Explain generalization, specialization and aggregation with example.			
	(c)	3	3	What is normalization? Why normalization required in DBS? How normalization process effective for DB design explain with modification anomaly.			
	(d)	1	2	Define data independence. Explain the difference between logical data independence and physical data independence.			
	(e)	2	2	Define constraint in DB design. How it maintain.			
	(f)	1	2	Compare features of database system and file processing system.			

PART-III

(Answer Any One question out of two)

		CO	Level	Level-1: Knowledge Level-4: Analysis	Level-2: Comprehension Level-5: Synthesis	Level-3: Application Level-6: Evaluation	1 X 16
Q3.	(a)	1	4	Construct an E-R diagram for a hotel booking system:			
				Entities	Attributes	Primary key	
				Hotel	Hotel No, Name, city	Hotel No	
				Room	Room No, Type, price	Room No	
				Guest	Guest No, Name, Address	Guest No	
				Every hotel has multiple rooms where each room belongs to exactly one hotel. A hotel may be booked by multiple guests and a guest may book multiple hotels. Date_from and Date_to are the attributes of this relationship			
	(b)	1	4	Convert the E_R model into a relational model.			
Q4.	(a)	1	4	Consider the following relation: Employee(emp_id,ename,job,sal,mgr,dept_id) Department(dept_id,dname,loc) Write RA and SQL for the following questions:			

				<ul style="list-style-type: none"> i. Find the employee name and job those who are working in department number 30. ii. List the department details located in Chicago. iii. List the department numbers which do not have any employees. iv. Find the employee name, job, department number working for Accounting department. 	
	(b)	2	4	<p>Consider a relation $R=\{A,B,c,D,E,F,G,H\}$ with following FDs, $F=\{A \rightarrow BCD, AE \rightarrow F, E \rightarrow G, D \rightarrow H\}$</p> <ul style="list-style-type: none"> i). Find the key. ii). In which normal form, the relation R is? iii). Apply normalization on R until it cannot be decomposed further explain reasons for decomposition. 	