Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Re-Exam

January 2020

Max. Marks: 60 **Class:** S.E.

Course Code: CE42 and IT43 **Name of the Course:** Database Management Systems

Semester: IV **Branch:** Computer and I.T.

SYNOPTIC

Q. No		Max Marks	CO
Q1(a)	Explain the concept of Data Independence? What are two types of data independence in any typical DBMS system?? **Solution :** Correct explanation of data independence = 2M Logical and Physical data independence correctly explained = 2M each **OR** Draw the overall system structure of a database system and explain any two components of it. **Solution :** Correct overall structure with 3 levels = 4 Marks Explanation correctly given for 2 components = 2 Marks	6	1
Q1(b)	Define the following terms by taking relevant example and draw ER diagram for the each example 1) IS-A relationship 2) Recursive Relationship **OR** A university database contains information about professors (identified by an emp_id number) and courses (identified by course_ID) and semester (Fall / Spring / Summer) . Draw an EER diagram for each of the given situation with assumption of relevant attributes: a) Each professor teaches exactly one course b) Each course is taught in at the most two semesters **Solution :**	6	1

	Correct definition with relevant example and correct E-R diagram. 3 marks each **OR** Correct Entities , attributes, cardinalities, Relationships = 4 Marks (a) Correct cardinality for Exactly one course = 1 M (b) Correct cardinality for at-most two courses = 1M		

Q2(a)	Creates a row-level trigger for the following Student table that would fire for INSERT or UPDATE operations. This trigger will display the Mark difference between the old Marks and new Marks.
	STUDENT(UID,SNAME,AGE,CITY,MARK)
	Solution : Trigger syntax-2marks
	Creation – 4 marks
	CREATE OR REPLACE TRIGGER display_MARKS_changes
	BEFORE INSERT OR UPDATE ON student
	FOR EACH ROW
	WHEN (NEW.ID > 0)
	DECLARE
	mark_diff number;
	BEGIN
	marks_diff := :NEW.marks - :OLD.marks;
	dbms_output.put_line('Old marks: ' || :OLD.marks);
	dbms_output.put_line('New marks: ' || :NEW.marks);
	dbms_output.put_line('Marks difference: ' || marks_diff);
	END;
		6	**3**

Q2(b)	Correct justification [2M], four related responsibilies like a) account createion b) Priviledge Granting c) Priviledge Revocation d) Security Level assignment with its brief explanation [4M]	**6**	**3**
Q3(a)	Consider the following database schems, Sailors(sid, sname, rating, age) Boats(bid, banme, color) Reserves(sid, bid, day) Write the the following SQL queries : 1) Find the total number of sailors whos age is 40 2) Find the sailors id, sailors name, reservation day for each reservation 3) Give the name of sailors who have reserved boat 103 4) Find the name of sailors who have reserved boat the red boat 5) Find the name of sailors whose age is greater than 30 6) Find the name and age of sailors with rating above 7.	**6**	**2**

	Solution : Each correct query = 1 Mark ,Total Marks = 6		
Q3(b)	Write the relational Algebra queries for the database schema given in Q3(a). **Solution :** Each correct query = 1 Mark ,Total Marks = 6	**6**	**2**
Q4(a)	Normalize it up to third normal form. **Solution :** 1 Normal Form -2 Marks 2 Normal Form -2 Marks 3 Normal Form -2 Marks	**6**	**4**
Q4(b)	Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. F = {CH -> G, A-> BC, B-> CFH, E-> A, F-> EG } is a set of functional dependencies (FDs) so that F+ is exactly the set of FDs that hold for R. How many candidate keys does the relation R have ? **Solution :** Possible candidate keys are : 1) AD 2) BD 3) FD 4) ED	**6**	**4**
Q5(a)	Consider the Data table with Item 1 and Item 2.Current value of is Item 1 is 982 and Item 2 is 458.Transaction T1 want to transfer 45 Item from Item 1 to Item 2. Create a transaction for the same. Show the effect of Atomicity and consistency property on above transaction. **Solution :** Transaction – 2marks Effect of Atomicity – 2marks Effect consistency – 2marks OR Description- 4 marks Example – 2marks	**6**	**5**
Q5(b)	Shadow paging. **Solution :** Explanation – 4 Marks Diagram – 2 Marks	**6**	**5**