ACAD-27 a)	Shri Ramdeobaba College of Engineering and Management, Nagpur -440013		Iss. No.: 01, Rev. No.: 00
Ref. Clause(s): 9.1			Date of Rev: 01/01/2018
Department:CSE	Semester: V Shift: II Course Code: CST351 Course Name:Database Management Systems		Page: 01/01
Programme:B.E.	Test: 1 Solution		Date of Exam:23-08-2021
Max Marks:15	Session:2021-22	Time: 01 Hour (10.30 AM to 11.30 AM)	

Q.1 a) Differentiate between the following: **03   CO1   L2**

(i)   Procedural and Non-Procedural DMLs.

Procedural DML	Non-Procedural DML
User specifies what data is required and how to get those data.	User specifies what data is required without specifying how to get those data.
It is also known as low level DML.	It is also known as high level DML.
Example: Relational Algebra	Example: SQL

(ii)   Instance and Schema.

Instance	Schema
The actual data stored in a database at a particular moment in time.	The description of a database.
Instance is also called extension.	Schema is also called intension
Instance changes frequently as DML operations are performed on the database.	The database schema changes very infrequently

b) Why SQL is called as **Fourth generation** language?   **02   CO1   L2**

Fourth-generation languages are programming languages that are closer to human language than high-level languages. These 4GLs are often used to access databases, such as SQL, where humanlike syntax is used to retrieve and manipulate data.

4GLs are more programmer-friendly and enhance programming efficiency with usage of English-like words and phrases, and when appropriate, the use of icons, graphical interfaces and symbolical representations.

4th generation language, a domain specific language, or a high productivity language. Hence, SQL is called as Fourth generation language.

Q.2 a) Consider the following database schema and write the SQL queries.   **05   CO1   L4**
Participant (PID, PNAME, GENDER, CID)
Course (CID, CNAME, CREDIT)

(i)   Find the name of the participants whose third character in the name is A.   **1**

select pname from participant where pname like '_ _A%';

(ii)   Display the course id, course name, and number of Participants enrolled in each course.   **2**

select p.cid, cname, count(*) "Number_of_Participants"
from course c, participant p
where c.cid=p.cid
group by p.cid, cname;

(iii)   Display the course id in which more than 50 female participants have enrolled.   **2**

select cid
from participant
where gender='F'
group by cid
having count(*)>50

Q.3 **a)** **Solve the following Questions.**   **05 CO2 L3**

(i) Assume that there is a set of FDs that satisfy a relation r(A,B,C).An instance of this relation is shown below. Find the functional dependencies that are satisfied by r.

[2]

A	B	C
f	e	e
d	e	e
b	c	e
a	c	d
a	b	c

A→A B→B And C→C are satisfied [Reflexive]
AB→C and AC→B are the functional dependency satisfied by the Relation r.

(ii) Consider following set F of functional dependency.   **[3]**
F={ XY→W,
   Y→Z,
  WZ→P,
  WP→QR,
  Q→X }
Using inference axioms, show that the functional dependency XY→Q holds,

(a) Y→Z, (given)
   WZ→P (given)   Apply Pseudo Transitivity Rule
  Therefore WY→P

(b) WP→QR (given)
 As, WY→P and WP→QR Apply Pseudo Transitivity Rule
   Therefore   W.W.Y→QR   [W.W=W]
                WY→QR

(c) XY→W (given)

   WY→QR   Apply Pseudo Transitivity Rule

 Therefore   X.Y.Y →QR   [Y.Y=Y]

               X.Y→QR

Apply Decomposition Rule on XY → QR

  Therefore   XY → Q   holds.