Registration No :

Total Number of Pages : 02   **B.Tech**
                                                                                 PCS4G001

4ᵗʰ Semester Regular / Back Examination 2018-19
DATA BASE SYSTEM
BRANCH : CSE
Time : 3 Hours
Max Marks : 100
Q.CODE : F957
Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.
The figures in the right hand margin indicate marks.

Part- I

Q1   Short Answer Type Questions (Answer All-10)   (2 x 10)
  a)   What is DBMS?
  b)   What are different types of database users?
  c)   What do you mean by open database connectivity?
  d)   What is the difference between primary key and candidate key?
  e)   Write the syntax of query representation in calculus.
  f)   What is functional Dependency?
  g)   What is the full form of XML? Write its application.
  h)   Discuss the different transaction states.
  i)   Define data Farming.
  j)   What is OLAP?

Part- II

Q2   Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve)   (6 x 8)
  a)   Consider the following database schema for supplier-parts-projects database (suppliers(Sno)
       supply parts(Pno) to projects(Jno)):
       Supplier(Sno,Sname,date_of_Birth,birth_place)
       Parts(Pno,Pname,color,weight,city)
       Project(Jno,Jname,city)
       Shipment(Sno,Pno,Jno,qty)
       Draw the E-R model. Also specify: the different entities, cardinalities and degrees of therelationships in the above model. Write the applications of E-R model.
  b)   Consider the database schema given in Q a), write queries/statements in SQL to:
       a. Create a Supplier Table.
       b. Retrieve the minimum quantity supplied by each Sno.
       c. Add a new constraint on parts color: color should be pink.
       d. Retrieve the supplier nos (Sno) of the suppliers who were born in Amritsar.
       e. Display the total qty supplied by supplier 'Hari'.
  c)   Normalize the following database upto 3NF:
       Student (course_code, CName, TeacherName, Rollno, SName, Sys_used, Hrly_rate,Total_ Hrs) Also, explain the delete and update anomalies of 1NF, 2NF and 3NF. How thesecan be rectified. [Assumptions: each student studies number of courses, Only one system isassigned to each student. Cname, Sname stands for Course name and student namerespectively].
  d)   Explain structure of XML document with suitable example.

  e)   Why concurrency control is needed in database system? Explain, any One concurrencycontrol technique?
  f)   Describe the three-level architecture of DBMS.

g) What is Relational Calculus? What is the difference between tuple relational calculus anddomain relational calculus? Explain with the help of suitable examples.

h) Discuss briefly about mobile database and multimedia database.

i) What are Data warehouses'? Explain the meaning of Extraction, Transformation andLoad in perspective of Data warehouses.

j) What is meant by the concurrent execution of Database Transactions in a multi usersystem? Discuss the different problems that can occur due to concurrent execution oftransactions. Explain with the help of an example the terms Serial – Schedule andSerializable Schedule.

k) What do you mean by Normalization? Explain the first three normal forms along withBCNF and the anomalies that exist in these normal forms with the help of suitableexamples.

l) Discuss how Database Systems differs from File System.

Part-III

Long Answer Type Questions (Answer Any Two out of Four)

Q3 What do you mean by ODBC and JDBC? Explain with the help of an example how toaccess data in the database from a Java application. **(16)**

Q4 What is the difference between relational algebra and relational calculus? **(16)**

Q5 Write short note on following : **(16)**
a) Integrity constraints
b) Scripting
c) Object Relational Database

Q6 Explain the terms : **(16)**
a) Data warehouse
b) Spatial and Geographical databases
c) Temporal Databases
d) NoSQL databases