# 2021

## STATISTICS — GENERAL

**Paper : SEC-B-1**

**(Database Management Systems)**

**Full Marks : 80**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

**1.** Answer ***any fifteen*** of the following : 2×15

(a) What is DBMS?

(b) What do you mean by durability in DBMS?

(c) Define weak and strong entities.

(d) What do you mean by database constraint?

(e) What is DDL?

(f) Define Procedural and non-procedural DML.

(g) What do you mean by object-relational model?

(h) Define primary key and candidate key with example.

(i) What is view in SQL?

(j) What do you mean by domain constraint?

(k) What is relational algebra?

(l) Define logical data independence.

(m) What is RDBMS?

(n) What are tables and fields in database?

(o) Write an SQL query to find names of student starting with 'M'.

(p) What is subquery in SQL?

(q) Define a relation schema and a relation.

(r) What are the unary operations in relational algebra?

(s) What is degree of relation?

(t) What are the disadvantages of DBMS?

**2.** Answer ***any six*** of the following : 5×6

(a) What do you mean by DA and DBA? How do they differ?

(b) How DBMS differs from traditional file processing system?

(c) What do you mean by data model? What are conceptual, physical and representational data model?

(d) Describe different types of relationships in a database by example.

(e) Describe theta join, left outer join, right outer join and full outer join with example.

(f) Explain the ACID property in a database.

(g) What is SQL? Explain its different data types.

(h) Differentiate between DBMS and RDBMS.

**3.** Answer ***any two*** of the following :

(a) What do you mean by data abstraction? Give an example. Explain the different levels of data abstraction by example. 2+2+6

(b) Consider the following relation :

College(Cname, State, EnrollNo)

Student(Sid, Sname, Marks)

Application(Sid, Cname, major)

Write the following queries in SQL :

(i) Find applications to 'XYZ' college as Statistics major.

(ii) List id and name of the student with marks greater than 60.

(iii) List name of the students with marks greater than 80 who applied to "Computer Science" at any college.

(iv) Illustrate theta join over students and apply table with Sid. 2+2+3+3

(c) Create the following tables, properly implement the integrity constraints and execute the following queries (insert values in such a manner that every query gives at least an output) :

TEACHER(tid, tname, address, gender, dept)

STUDENT(sid, sname, scity, age)

TAUGHT_BY(tid, sid, subject)

Write the SQL commands to perform the following:

(i) List all the students within age group 16 to 21 years.

(ii) Find the name of teachers who teach Statistics.

(iii) Count the total number of students in the Mathematics department.

(iv) Find the name of students who live in Kolkata.

(v) Find the name and address of lady teachers. 2+2+2+2+2