

**Instructions: Answer four (04) questions.**  
(This paper consists of 02 page)

1. i. What is DBMS? (05 Marks)
- ii. What is data abstraction? (04 Marks)
- iii. Describe different types of data abstractions (04 Marks)
- iv. Write three advantages and disadvantages of using a DBMS (12 Marks)
  
2. i. What is a relation? Define the relational data model (10 Marks)
- ii. Define the following terms
  - (a) Cardinality
  - (b) Attribute
  - (c) Degree of relations
  - (d) Primary key
  - (e) Tuple (15 Marks)
  
3. Consider the following relation 'Student'

Name	Class	Marks
Susantha	1	400
Athula	2	475
Ravishan	1	425

- i. Write SQL statement to display the name and the class of the student who has obtained 400 marks.  
(12 Marks)
  
- ii. Write SQL statement to display name and class of the students who are in class 1 and marks  $\leq 400$ . (13 Marks)

4. Write SQL commands on the basis of the following relation of Teacher.

Teacher (No, Name, Department, DateofJoin, Salary, Sex)

- i. To select all the information of teacher in Computer department (06 Marks)
- ii. To list the names of female teachers who are in History department (06 Marks)
- iii. To list all the names of the teachers in ascending order of their joining date. (07 Marks)
- iv. To display Name, Department, and Salary of female teachers. (06 Marks)

5. i. What is the purpose of normalization? (05 Marks)
- ii. When is a relation said to be in second normal form? (05 Marks)
- iii. Convert the following database into 1NF, 2NF, and 3NF. (15 Marks)

Supplier	Name	Status	City	Part	Qty
S0001	Jagath	18	Colombo	P3	120
S0001	Jagath	18	Colombo	P1	450
S0001	Jagath	18	Colombo	P4	100
S0002	Bandara	14	Kandy	P3	160
S0007	Sanath	18	Colombo	P4	350

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