

2020

COMPUTER SCIENCE — GENERAL

Paper : DSE-A-1

[Database Management System (DBMS)]

Full Marks : 50

The figures in the margin indicate full marks.

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

Day 2

Answer **question no. 1** and **any four** questions from the rest.

1. Answer **any five** questions : 2×5
- (a) Define DBMS.
 - (b) Why is normalization necessary?
 - (c) Name any two DML and DDL commands in SQL.
 - (d) What do you understand by data independence?
 - (e) Name any four normal forms.
 - (f) Write the purpose of join operation.
 - (g) Define primary key of a relation. Give an example.
 - (h) What is functional dependency?
2. (a) State any five advantages of using DBMS.
- (b) Differentiate between strong entities and weak entities. Also, mention the role of partial key in a weak entity. 5+(4+1)
3. (a) Explain the levels of ANSI / SPARC architecture.
- (b) What is aggregation? Explain with an example. 5+5
4. (a) Discuss the importance of entity integrity constraint.
- (b) Define foreign key. Give an example.
- (c) Why are duplicate tuples not allowed in a relation? 3+(2+2)+3

Please Turn Over

5. (a) Find candidate keys of the relation R (A, B, C, D, E) which has the following functional dependencies :
- A \rightarrow D
 - B \rightarrow A
 - BC \rightarrow D
 - AC \rightarrow E
- (b) Describe the concept of a 3NF relation with the help of an example. 5+5
6. (a) Explain the meanings of existential quantifier (\exists) and universal quantifier (\forall) in tuple relational calculus.
- (b) Explain the concept of specialization and generalization. 5+5
7. (a) Given the relational schema :
- BOOK (BID, BNAME, AUTHOR, PUBLISHER, YEAR)
- Write a relational algebra query to retrieve all books published in 2020.
- (b) Discuss binary relationships with the aid of an example and ER diagram. 5+5
8. Write short notes on **any two** of the following : 5×2
- (a) Aggregation
 - (b) Tuple Relational Calculus
 - (c) BCNF
 - (d) Functional Dependency.
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