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B. Tech. IV - Sem. (Main / Back) Exam., (Academic Session 2021- 2022)
Computer Science & Engineering
4CS4 – 05/4IT4 - 05 Database Management System
Common to CSE & IT, AI, DS, MLC, CSE (AIML), CSE (DS), CSE (AI)

Time: 2½ Hours

Maximum Marks: 120
Min. Passing Marks:

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 6×3 marks = 18 marks.
Candidates have to answer six questions out of ten.

Part – B: Analytical/Problem solving questions 3×10 marks = 30 marks.
Candidates have to answer three questions out of seven.

Part – C: Descriptive/Analytical/Problem Solving questions 3×24 marks = 72 marks.
Candidates have to answer three questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

*Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)*

1. NIL

2. NIL

PART – A

Q.1 Write at least four advantages of DBMS.

Q.2 What are the features of ER model?

Q.3 What do you mean by Active Databases?

Q.4 What is the need of Normalization?

Q.5 What are the time based protocols?

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- Q.6 Explain recovery schemes after failure.
- Q.7 Explain hierarchical database with example.
- Q.8 What are the types of databases?
- Q.9 Explain ACID properties of database.
- Q.10 What are the integrity rules of RDBMS?

PART – B

- Q.1 Explain DBMS architecture and its types.
- Q.2 Explain mapping cardinalities between two entities with real life example.
- Q.3 Explain candidate key, super key, foreign key, alternate key, composite key and artificial key with example. <https://www.btubikaner.com>
- Q.4 Explain Generalization vs specialization.
- Q.5 Explain all types of join operators in DBMS.
- Q.6 Explain relational calculus with its types and examples.
- Q.7 Explain all types of inference rules corresponding to functional dependency.

PART – C

- Q.1 What is Normalization? Explain all types of normal forms with example?
- Q.2 What is Relational Decomposition? Explain types of decomposition with examples.
- Q.3 Do the following -
- (a) State diagram of transaction with explanation.
 - (b) Explain schedule and types under it.
- Q.4 Do the following -
- (a) Differentiate irrecoverable and recoverable with cascading rollback schedule with example.
 - (b) Differentiate ODBC and JDBC.
- Q.5 Differentiate the following -
- (a) Conflict vs View Serializability
 - (b) Embedded SQL vs Dynamic SQL