

FACULTY OF ENGINEERING**B.E. 3/4 (CSE) I – Semester (Main & Backlog) Examination, January 2018****Subject: Database Management Systems****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A and any five questions from Part B.****PART – A (25 Marks)**

- 1 What are Domain Constraints? List all of them. 2
- 2 What are three levels of Data abstraction? 2
- 3 Write the Fundamental Relational algebra operations with symbols. And justify how SELECT statement of Relational algebra operation is different from SQL SELECT Statement, with an example? 3
- 4 Which integrity constraint is used to identify the uniqueness of a row in a table? 2
 - a) NOT NULL b) Foreign Key c) UNIQUE d) PRIMARY KEY
- 5 Define Joins. What are the conditions of joins used in SQL? 3
- 6 Define Embedded SQL. Syntax in Programming Language. 3
- 7 Draw the Sparse index using any example? 3
- 8 What is Blind-Write? 2
- 9 Explain Recoverability? 2
- 10 What is Two-Phase locking Protocol? 3

PART – B (5x10 = 50 Marks)

- 11 a) Explain the Database Architecture? 6
 - b) Explain the functions of database administrator? 4
- 12 a) Explain extended relational algebra operations? 4
 - b) Discuss the various types of SET operations used in SQL, with syntax. 6
- 13 a) Define Procedure constructs in database. Write the syntax. 4
 - b) Explain 1NF, 2NF, and 3NF with appropriate example? 6
- 14 a) Construct the B+ tree index structure for the given set of search keys that can accommodate four (4) pointers in a node. 5

2 3 5 7 11 17 19 23 29 31 35

 - b) Differentiate between Static Hashing and Dynamic Hashing. 5
- 15 a) Explain multiple Granularity using compatibility matrix with diagram? 5
 - b) What is Checkpoint? Explain log-based recovery algorithm? 5

- 16 a) Explain Bitmaps indexing technique with an appropriate example? 5
- b) What are Deadlock prevention techniques? Explain. 5
- 17 Write short notes on the following:
- a) Integrity Constraints 4
- b) Functions in Database, write Syntax. 3
- c) Check-point in Recovery system. 3

FACULTY OF INFORMATICS**B.E. 3/4 (IT) I – Semester (Main & Backlog) Examination, January 2018****Subject: Database Management Systems****Time: 3 Hours****Max.Marks: 75****Note: Answer all questions from Part A. Answer any five questions from Part B.****PART – A (25 Marks)**

- 1 Write about any four mapping cardinalities. 2
- 2 Write about various levels of data abstraction. 2
- 3 What is the difference between generalization and aggregation? 3
- 4 What are various DDL statements used in SQL? 2
- 5 Explain the types of ordered indices. 2
- 6 With the difference between B-tree and B+tree. 3
- 7 Write about INF with an example. 2
- 8 What is an index in SQL? What are its uses? 3
- 9 Define lock. List out various types of lock. 3
- 10 What is a phantom record? Why do they occur? 3

PART – B (5x10 = 50 Marks)

- 11 a) Distinguish between file processing system and DBMS. 5
b) List out various functions of a database administrator. 5
- 12 Discuss about the fundamental and extended relational algebra operations with examples. 10
- 13 a) Explain briefly normalization with example. 6
b) Compare between embedded and dynamic SQL. 4
- 14 a) Define hashing and explain handling of bucket overflow. 5
b) Show that two phase locking protocol ensures conflict serializability. 5
- 15 a) Write about timestamp based protocol. 5
b) Explain various approaches in log based recovery. 5
- 16 a) Explain state diagram of transaction. 6
b) Write about Thomas Write Rule. 4
- 17 Write short notes on the following:
 - a) Triggers 3
 - b) Deadlock recovery 4
 - c) Remote backup systems 3
