

Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
OE00045 Advanced DBMS

Programme: MCA Branch/Specialisation: Computer Application

Duration: 3 Hrs.**Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. The descriptive property possessed by each entity set is **1**
 (a) Entity (b) Attribute (c) Relation (d) Model
- ii. Collection of information stored in a database at a particular moment is **1**
 (a) View (b) Schema (c) Instance (d) None of these
- iii. A functional dependency is a relationship between or among. **1**
 (a) Tables (b) Rows (c) Relations (d) Attributes
- iv. A normal form in which every determinant is a key **1**
 (a) 2NF (b) 3NF (c) BCNF (d) 4NF
- v. Which of the following is used to denote the selection operation in relational algebra? **1**
 (a) Pi (Greek) (b) Sigma (Greek)
 (c) Lambda (Greek) (d) Omega (Greek)
- vi. A sequence of primitive operations that can be used to evaluate a query are called as..... **1**
 (a) Query Evaluation Algebra
 (b) Query Evaluation Plan
 (c) Query Evaluation Primitive
 (d) Query Evaluation Engine
- vii. Storing a separate copy of the database at multiple locations is which of the following **1**
 (a) Data Replication (b) Horizontal Partitioning
 (c) Vertical Partitioning (d) None of these
- viii. Which of the following is parallel database architecture? **1**
 (a) Shared Nothing (b) Shared Memory
 (c) Shared Disk (d) All of these

- ix. The Keyword “inverse” is used in which of the following. **1**
 (a) Class (b) Attribute
 (c) Relationship (d) All of these
- x. OODBMS uses the concept of **1**
 (a) Class (b) Entity (c) Key (d) Attribute
- Q.2 i. What is data independence? **2**
 ii. What is key? Discuss various types of keys. **3**
 iii. Explain overall system structure of DBMS. **5**
- OR iv. Explain in detail about specialization, generalization, aggregation using ER diagram. **5**
- Q.3 i. What do you mean by Normalization? Why it is needed? **2**
 ii. Explain Join dependency with suitable example. **3**
 iii. Explain 3NF with example. Compare BCNF and 3NF. **5**
- OR iv. What is Multivalued dependency? Explain 4NF based on this concept. **5**
- Q.4 i. What is System Catalog? What information is stored in the System Catalog? **2**
 ii. What is an Access Path? Explain with example. **3**
 iii. How algorithm for relational operations can be used to design selection, projection and join operators? **5**
- OR iv. What is Query Optimization? Explain different Evaluation Plans. **5**
- Q.5 i. Define the terms fragmentation and replication. **2**
 ii. What is Parallel Query Evaluation? Discuss various techniques for partitioning data. **8**
- OR iii. What is distributed database? Explain different architectures of distributed databases. **8**
- Q.6 i. Explain Mobile Database. **2**
 ii. What is Multimedia Database? Discuss its application and challenges in brief. **3**
 iii. Compare RDBMS, OODBMS and ORDBMS. **5**
 iv. What are the different challenges to implement ORDBMS? **5**

P.T.O.

Marking Scheme
OE00045 Advanced DBMS

Q.1	i.	The descriptive property possessed by each entity set is (b) Attribute	1
	ii.	Collection of information stored in a database at a particular moment is (c) Instance	1
	iii.	A functional dependency is a relationship between or among. (d) Attributes	1
	iv.	A normal form in which every determinant is a key (c) BCNF	1
	v.	Which of the following is used to denote the selection operation in relational algebra? (b) Sigma (Greek)	1
	vi.	A sequence of primitive operations that can be used to evaluate a query are called as..... (b) Query Evaluation Plan	1
	vii.	Storing a separate copy of the database at multiple locations is which of the following (a) Data Replication	1
	viii.	Which of the following is parallel database architecture? (d) All of these	1
	ix.	The Keyword “inverse” is used in which of the following. (c) Relationship	1
	x.	OODBMS uses the concept of (a) Class	1
Q.2	i.	Definition of data independence	2
	ii.	Definition of key Explanation of Any 4 keys (0.5 mark * 4)	1 mark 2 marks
	iii.	Overall system structure of DBMS. Diagram of system structure of DBMS Explanation of System structure (Architecture) of DBMS	5 2 marks 3 marks
OR	iv.	Definition of Specialization Definition of Generalization Definition of Aggregation ER diagram	1 mark 1 mark 1 mark 2 marks
Q.3	i.	Definition of Normalization Normalization is needed	1 mark 1 mark

	ii.	Definition of Join dependency Example of Join dependency	2 marks 1 mark	3
	iii.	Definition of 3NF Example of 3NF Comparison BCNF and 3NF	1.5 marks 1.5 marks 2 marks	5
	OR	iv.	Definition of Multivalued dependency Explanation of 4NF with example	2 marks 3 marks
	5			
Q.4	i.	Definition of System Catalog Information is stored in the System Catalog	1 mark. 1 mark	2
	ii.	Definition of Access Paths Example of Access Path	1.5 marks 1.5 marks	3
	iii.	Explanation of selection, projection and join operator		5
	OR	iv.	Definition of Query Optimization with diagram Explanation of different Evaluation Plans: Query Evaluation Plans Multi operator queries: Pipelined Evaluation The Iterator Interface	5 2 mark 1 mark 1 mark 1 mark
Q.5	i.	Definition of Fragmentation Definition of Replication	1 mark 1 mark	2
	ii.	Explanation of Parallel Query Evaluation: Pipelined parallelism and data partitioned parallelism	4 marks.	8
		Explanation of various techniques for partitioning data: round robin, hash and range	4 marks	
	OR	iii.	Explanation of Distributed databases The three main architectures for distributed DBMSs: 2 marks for each (2 marks * 3)	2 marks 6 marks
Q.6	i.	Mobile Database.		2
	ii.	Definition of Multimedia Databases Application and challenges	1 mark. 2 marks	3
	iii.	Comparison of RDBMS, OODBMS and ORDBMS		5
	iv.	Explanation of different challenges to implement ORDBMS: (Storage and Access Methods, Query Processing and Query Optimization)		5
