Code No: RT31054 **R13** SET - 1

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
DATABASE MANAGEMENT SYSTEMS
(Common to CSE and IT)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	Differentiate between schema and instance.	[4M]
	b)	What is the importance of handling null values in a relation?	[4M]
	c)	List SQL grouping functions with examples.	[4M]
	d)	Describe lossless join decomposition.	[3M]
	e)	State and explain two-phase locking protocol.	[4M]
	f)	What is multilevel indexing?	[3M]

PART –B

2	a)	Describe the characteristics of a database system.	[4M]
	b)	Draw and explain three-tier schema architecture of database system.	[8M]
	c)	Present any two database applications by describing their features.	[4M]
3	a)	What is a relation? Describe the characteristics of a relation.	[6M]
	b)	Discuss the importance of entity integrity and referential integrity constraints.	[5M]
	c)	What is relation schema and state?	[5M]
4	a)	What is ER model? Explain its concepts.	[10M]
	b)	Distinguish between independent and correlated nested queries. Provide appropriate examples to support your explanation.	[6M]
5	a)	Why normalization is needed? Explain the process of normalization.	[8M]
	b)	Explain the role of functional dependencies in normalization with suitable examples.	[8M]
6	a)	What is transaction? Mention the desirable properties of a transaction.	[6M]
	b)	Discuss about transaction recovery techniques.	[10M]
7	a)	Mention various types of records. Describe how they are organized inside a file?	[8M]
	b)	What is an index? Explain its role in improving database access.	[8M]

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Code No: RT31054 **R13** SET - 2

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What is Data independence?	[3M]
	b)	Write and describe the structure of SQL SELECT statement.	[4M]
	c)	Describe entities and relationships with examples.	[4M]
	d)	Define surrogate key and specify an example of it.	[3M]
	e)	What is transaction log? Mention its content.	[4M]
	f)	Describe the structure of a node in B-tree .	[4M]

PART –B

2	a)	What do you mean by environment in database systems? Explain with the help of database system structures.	[8M]
	b)	Explain the client - server architecture of a DBMS.	[8M]
3	a)	By considering suitable examples, describe the usage of SQL CREATE and ALTER statements.	[8M]
	b)	What is DML? Explain DML operations with examples.	[8M]
4	a)	Write about different types of attributes in ER model. Show the notation of each.	[4M]
	b)	What is a weak entity type? How to model it? Explain with suitable example.	[4M]
	c)	What is a view? How to specify a view? Write about view implementation techniques.	[8M]
5	a)	What is a normal form? Explain about various normal forms with examples.	[10M]
	b)	List and explain the inference rules of functional dependencies.	[6M]
6	a)	Why concurrency control is needed? Explain the problems that would arise when concurrency control is not provided by the database system.	[9M]
	b)	What is serialization? Explain it.	[7M]
7	a)	Compare and contrast between heap files and sorted files.	[8M]
	b)	Define dynamic multilevel indexing how to implement it with the help of B+ trees? Explain.	[8M]

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Code No: RT31054 **R13** SET - 3

III B. Tech I Semester Regular/Supplementary Examinations, October/November - 2016
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Time: 3 hours Max. Marks: 70

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What are the responsibilities of DBA?	[3M]
	b)	Show how data integrity can be guaranteed by using different database constraints.	[4M]
	c)	Illustrate the implementation of equi-join and outer joins in SQL.	[4M]
	d)	Explain the need of schema refinement.	[3M]
	e)	What is a database trigger? Give an example of trigger definition.	[4M]
	f)	Differentiate between spanned and unspanned records.	[4M]

PART –B

2	a)	Mention various groups of database users. Explain about their roles in detail.	[8M]
	b)	What is a data model? Describe various data models.	[8M]
3	a)	With the aid of relevant examples illustrate different DDL statements supported by SQL.	[8M]
	b)	What is SQL single row function? By means of suitable examples illustrate the usage of SQL date, character and number functions.	[8M]
4	a)	Explain in detail about inheritance, specialization and generalization using ER diagrams.	[12M
	b)	List and explain aggregate functions used in SQL with examples.	[4M]
5	a)	What is multi valued dependency? Illustrate 4NF with an example.	[6M]
	b)	What is minimal cover / irreducible set of functional dependencies? Write and explain the steps of the algorithm used for finding minimal cover. Consider an example set of FDs and trace the algorithm.	[10M]
6	a)	Write about the transaction management with SQL using commit, rollback, and savepoint.	[6M]
	b)	Briefly discuss about various lock based mechanisms used in concurrency control.	[10M]
7	a)	Discuss in detail about different file operations.	[8M]
	b)	By means of an example, show how to determine the order of a B-Tree.	[8M]

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Code No: RT31054 **R13** SET - 4

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2. Answering the question in **Part-A** is compulsory
3. Answer any **THREE** Questions from **Part-B**

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PART –A

1	a)	What is Database system? Give any four features that a database system should provide to its users.	[4M]
	b)	Define domain, attribute, tuple and relation.	[3M]
	c)	Differentiate specialization and generalization.	[4M]
	d)	By means of an example show how BCNF is stronger than 3NF.	[3M]
	e)	Explain Grant and Revoke commands with examples.	[4M]
	f)	What is hashing? Explain it briefly.	[4M]

PART –B

2	a)	Distinguish between centralized and client-server architectures of a database system.	[8M]
	b)	Differentiate between File system and Database System.	[8M]
3	a)	Write in detail about different types of constraints that can be specified on a relation.	[8M]
	b)	What is the difference between DELETE, TRUNCATE and DROP statements in SQL?	[4M]
	c)	Discuss about SQL data types.	[4M]
4	a)	With the aid of appropriate examples, describe how to model the following in ER model: i) Entity type ii) Relationship type iii) Super class iv) Sub class	[8M]
	b)	Illustrate the usage of SQL GROUP BY, ORDER BY and HAVING clauses.	[8M]
5	a)	How to find closure of an attribute based on a given set of FDs? Write the steps of the algorithm and explain.	[6M]
	b)	What is the importance of dependency preservation during decomposition? How to achieve it?	[4M]
	c)	Explain insertion, deletion, and modification anomalies.	[6M]
6	a)	Discuss in detail about timestamp based concurrency control techniques.	[10M]
	b)	Show how 2PL protocol ensures serializability.	[6M]
7	a)	Distinguish between static and dynamic hashing.	[8M]
	b)	Illustrate how balanced trees are advantageous over search trees.	[8M]

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