Code: 9A05401

R09

B.Tech II Year II Semester (R09) Supplementary Examinations December/January 2014/2015

DATABASE MANAGEMENT SYSTEMS

(Common to CSE, IT & CSS)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

*****

1 (a) What are the advantages and disadvantages of using DBMS?
(b) What is a relationship? Explain types of relationships that exist?

2 How to develop an ER diagram? Write steps for developing an ER Diagram with an example?

3 (a) How the natural join and outer join are performed in relational DB?
(b) Write about the evolution of CODD's rules and explain about those rules.

4 Write a PL/SQL program to perform the operations of library management system.

5 (a) Write a short note on MVD (Multivalued dependencies).
(b) What are the inference rules for MVD? Explain.

6 Explain about:
(a) Lock granularity.
(b) Lock types.
(c) Phase locking.

7 Explain the terms:
(a) ARIES.
(b) Transaction rollback.
(c) Fuzzy check pointing.
(d) Logical undo logging.

8 Explain about different file organization techniques.

*****

Code: 13A05402

R13

B.Tech II Year II Semester (R13) Regular & Supplementary Examinations May/June 2016

DATABASE MANAGEMENT SYSTEMS

(Common to CSE and IT)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What is a data model? List the types of data model used.
(b) What are attributes? Give examples.
(c) Define weak and strong entity sets.
(d) What is embedded SQL? What are its advantages?
(e) What are the ACID properties?
(f) What are the time stamps associated with each data item?
(g) What is database tuning?
(h) What is functional dependency?
(i) What is 2NF?
(j) What is indexing and what are the different kinds of indexing?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Explain the Overall Structure of Data base management system.

OR

3 What is ER diagram? Explain the terms of ER diagram and draw the ER diagram for library management system.

UNIT – II

4 (a) Explain about Composition of Relational Operations.
(b) Explain about Domain Relational Calculus.

OR

5 Explain about Multi-valued dependencies and Fourth Normal Form.

UNIT – III

6 Explain about Embedded SQL.

OR

7 Explain about schemas and triggers in DBMS.

UNIT – IV

8 Explain about several types of ordered indexes.

OR

9 Briefly explain about B+ tree index file.

UNIT – V

10 Explain about concurrency control.

OR

11 Define the time stamp? Explain time stamp based protocol.

*****

Code: 9A05401

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

DATABASE MANAGEMENT SYSTEMS

(Common to CSS, IT & CSE)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

*****

1 (a) What is meta data? Explain with example.
(b) Differentiate between external model and internal model.

2 (a) What is a key? Explain various types of keys.
(b) Explain briefly about one to one, one to many and many to many relations.

3 How the relationships within the relational database are established? Explain each with example.

4 Explain about all the SQL functions in advanced SQL with syntax and example.

5 (a) Explain join dependency.
(b) Explain 5NF with an example.

6 Explain about:
(a) Scheduler.
(b) Uncommitted data.
(c) Inconsistent retrieval.
(d) Lost updates.

7 (a) Describe in detail about buffer management in recovery system.
(b) What is log based buffering and database buffering? Explain.

8 Briefly explain about index selectivity.

*****

Code: 9A05402

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

OBJECT ORIENTED PROGRAMMING

(Common to CSS, IT & CSE)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

*****

1 (a) What is the difference between a message passing and a procedure call?
(b) Explain class hierarchies.

2 (a) How java is more secure than other languages?
(b) What is data type? Explain data types in java.

3 (a) What is abstract class? Explain with an example.
(b) Explain the procedure to call super class members with examples.

4 Write a sample program to illustrate packages.

5 (a) What is an exception? Write about exception handling.
(b) Describe any two types of exceptions.

6 (a) Explain the label AWT control.
(b) Explain the button AWT control.

7 (a) Write short note on JApplet.
(b) Write short note on JFrame and JComponent.

8 Explain about life cycle of servlet? Where does the basic servlet fit into the servlet framework?

*****

Code: 9A05403 R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

DESIGN & ANALYSIS OF ALGORITHMS

(Common to CSS, IT & CSE)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

*****

1 Discuss about randomized algorithms in detail.

2 (a) Write a pseudo code for the implementation of UNION instruction using linked list. Explain the working of the implementation.
(b) Give the trees for the set {1, 2, 3, 4, 5, … n} by using weighting rule.

3 Discuss in detail the Stressen's matrix multiplication concept with an example.

4 (a) Prove that if $P_1/W_1 \geq P_2/W_2 \geq \ldots\ldots\ldots \geq Pn/Wn$, then greedy knapsack generates an optimal solution to the given instance of knapsack problem.
(b) Let n = 5 , P [1: 5] = (20,15,10,5,1) and d [1: 5] = (2,2,1,3,3). Generate the trees defined by the P (i)'s for the first three iterations.

5 Design a three stage system with device types D_1, D_2, D_3. The costs are the Rs 30. Rs 15 and Rs 20 respectively. The cost of the system is to be not more than Rs. 105. The reliability of each device type is 0.9, 0.8 and 0.5 respectively.

6 Draw the portion of the state space tree generated by SUMOFSUB procedure while working on the instance n = 6; M = 30; w (1:6) = (5, 10, 12, 13, 15, 18).

7 Explain the principles of:
(a) LIFO branch and bound.
(b) FIFO branch and bound.

8 (a) Show that any language in NP can be decided by an algorithm running in time $2^{o(nk)}$ for some constant k.
(b) Prove that if $\mathrm{NP} \neq \mathrm{CO} - \mathrm{NP}$, then $\mathrm{P} \neq \mathrm{NP}$.

*****

Code: 9A05406

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

COMPUTER ORGANIZATION

(Common to ECC & CSE)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

*****

1 (a) Write a note on performance measure.
(b) Explain basic operational concepts of a computer with neat diagram.

2 Draw and explain the flow chart for instruction cycle.

3 (a) Discuss in detail the binary micro program.
(b) What are the functions of control unit in a digital computer?

4 (a) Explain non restoring method of division with a simple example.
(b) With the help of a flow chart explain the division operation.

5 (a) Explain the concept of bit representation on the magnetic disk.
(b) What are the important characteristics of a magnetic disk?

6 (a) What is DMA? Explain the transfer of data from memory to I/O device with the help of a flow chart.
(b) Explain the limitations in programmed I/O and interrupt driven I/O.

7 Explain the two phases instruction fetch and execute .

8 (a) Explain memory update policies to prevent cache coherence problem.
(b) Discuss on the advantages of loosely coupled systems.

*****

Code: 9A05407

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

FORMAL LANGUAGES & AUTOMATA THEORY

(Computer Science & Engineering)

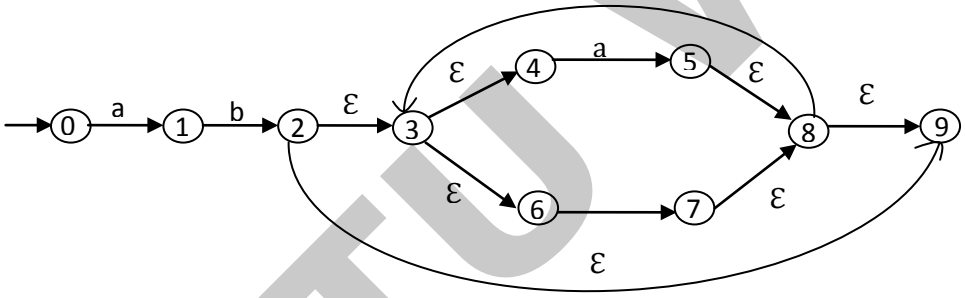
Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

*****

1 Define DFA (Deterministic Finite Automata) and discuss its performance in detail with a suitable example.

2 Convert the following NFA with ε to NFA without ε.
(a) Conversion steps.
(b) Converting NFA with ε to NFA without ε.



3 (a) Discuss the applications of a regular expression.
(b) Explain and prove if L_1 and L_2 are two languages then $L_1 U L_2$ is regular.

4 (a) Write the procedure for the conversion of right linear grammar to left linear grammar.
(b) Explain the properties of deviation trees.

5 (a) State and prove pumping lemma for context free languages.
(b) Using pumping lemma, prove that L = $\{a^i b^i c^i / i >= 1\}$ is not a CFL.

6 (a) Distinguish between finite automata and PDA.
(b) Construct PDA for L = $\{ a^i b^j c^j / i,j >= 1\}$. Show the moves of the PDA for the string.

7 (a) Design a TM for computing factorial of a given number n.
(b) What are the modifications that can be done to the basic model of a TM? Discuss any two in brief.

8 Prove that PCP is undecidable.

*****

Code: 9ABS303

R09

B.Tech II Year II Semester (R09) Regular & Supplementary Examinations June 2014

ENVIRONMENTAL SCIENCE

(Common to CE, ME, IT, CSE, AE, BT & MCT)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions

All questions carry equal marks

*****

1. (a) Highlight the difference between environment science, environment studies & environment engineering.
   (b) Explain environmental science as multidisciplinary science.

2. (a) What is the impact of deforestation on available water resources?
   (b) What are the measures adopted to treat waterlogged and saline soils?

3. (a) How energy flows in an ecosystem? Define producer, consumer & decomposers.
   (b) What are the characteristics feature, structures and function of aquatic ecosystem (ponds & lakes)?

4. Define ecosystem biodiversity. List the hotspots of biodiversity in our country. What is the conservation strategy adopted?

5. (a) What is cyclone? What are the control measures taken for cyclone disaster?
   (b) What are the causes, effects & control measures for air pollution?

6. (a) What are the water conservation techniques adopted in urban and rural regions?
   (b) What is the impact of climate change on available water in tropical belt?

7. (a) Explain role of women and child welfare in a nation's development.
   (b) What is the role of information technology in environmental assessment?

8. (a) Define the following:
      (i) Food chain.
      (ii) Food web.
      (iii) Ecological pyramid.
      (iv) Acid rain.
   (b) Short note on:
      (i) Waste land reclamation.
      (ii) Effect of ozone layer depletion.
      (iii) Industrial waste management.

*****

Code: 15A05301

R15

B.Tech II Year I Semester (R15) Regular Examinations November/December 2016

DATABASE MANAGEMENT SYSTEMS

(Common to CSE and IT)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) What is weak entity? Give an Example.
(b) Define Primary key and Candidate key.
(c) Define Tuple Relational Calculus.
(d) List out different types of join operations.
(e) What are the anomalies in bad design of database?
(f) Define multivalued functional dependency.
(g) Why is concurrency control needed?
(h) Define states of transaction.
(i) Why B+ tree efficient than B tree?
(j) What are the problems with static Hashing?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Construct an Entity Relationship (ER) Model for Company Database and Convert it into normalized relations.

OR

3 Define Database and DBMS. Explain Advantages of using a DBMS over File Processing system.

UNIT – II

4 What is Relational Algebra? Explain in detail Relational Algebra Operations with syntax.

OR

5 Explain in detail DDL (Data Definition Language), DML (Data Manipulation Language) and DCL (Data Control Language) commands in SQL with suitable examples.

UNIT – III

6 What is Normalization? Explain in detail 1NF, 2NF, 3NF, BCNF with example.

OR

7 Explain in detail Lossless join decomposition and dependency preserving decomposition with suitable example.

UNIT – IV

8 What is serializability? Explain in detail its types.

OR

9 Discuss various concurrency control protocols.

UNIT – V

10 What is an index? What are the different types of indexes? Discuss important properties of an index that affect the efficiency of search.

OR

11 Distinguish between Extendible and Linear Hashing with example.

*****

Code: 15A05301 **R15**

B.Tech II Year I Semester (R15) Supplementary Examinations June 2017

DATABASE MANAGEMENT SYSTEMS

(Common to CSE and IT)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

1 Answer the following: (10 X 02 = 20 Marks)

(a) How many distinct tuples are in a relation instance with cardinality 22?

(b) Define candidate key.

(c) Let R = (A, B, C), and let r_1 and r_2 both be relations on schema R. Give an expression in SQL that is equivalent to $r_1 - r_2$.

(d) Explain the statement that relational algebra operators can be composed. Why is the ability to compose operators important?

(e) Decompose the functional dependency X → YZ.

(f) Consider a relation R(A, B, C, G, H, I) and functional dependences {A → B, A → C, CG → H, CG → I, B → H}. Compute (AG)+.

(g) Suppose that there is a database system that never fails. Is a recovery manager required for this system?

(h) What benefit does strict two-phase locking provide?

(i) List the two kind of indices.

(j) B+ tree of order d has m entries in every node. What is the mathematical relation between d and m?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 (a) Why would you choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system?

(b) What are the responsibilities of a DBA? If we assume that the DBA is never interested in running his or her own queries, does the DBA still need to understand query optimization? Why?

OR

3 Consider the following information about a university database:
Professors have an SSN, a name, an age, a rank and a research specialty. Projects have a project number, a sponsor name, a starting date, an ending date and a budget. Graduate students have an SSN, a name, an age and a degree program. Each project is managed by one professor. Each project is worked on by one or more professors. Professors can manage and/or work on multiple projects. Each project is worked on by one or more graduate students. When graduate students work on a project, a professor must supervise their work on the project. Graduate students can work on multiple projects, in which case they will have a supervisor for each one. Departments have a department number, a department name and a main office. Departments have a professor who runs the department. Professor's work in one or more departments.
Design and draw an ER diagram that captures the information about the university.

UNIT – II

4 Consider the following schema:
Suppliers(sid: integer, sname: string, address. string)
Parts(pid.' integer, pname: string, color: string)
Catalog(sid: integer, pid. integer, cost: real)
Write the queries in relational algebra, tuple relational calculus, domain relational calculus and SQL to find the *sids* of suppliers who supply some red part and some green part.

OR

5 Consider the following relational schema and briefly answer the questions that follow:
Emp(eid: integer, ename: string, age: integer, salary: real)
Dept(did: integer, budget: real, managerid: integer)

(a) Define a table constraint on **Emp** that will ensure that every employee makes at least $10,000.

(b) Define a table constraint on **Dept** that will ensure that all managers have age > 30.

Contd. in page 2

UNIT – III

6 Explain about following normal forms
(a) Second Normal Form.
(b) Third Normal Form.
(c) Boyce-Codd Normal Form.

OR

7 (a) Write a short note about lossless join decomposition.
(b) Give a note on Dependency preservation.

UNIT – IV

8 Show that there are schedules that are possible under the two-phase locking protocol, but are not possible under the timestamp protocol, and vice versa.

OR

9 (a) List the ACID properties. Explain the usefulness of each
(b) Explain the difference between the three storage types-volatile, nonvolatile and stable in terms of I/O cost.

UNIT – V

10 Explain the difference between Hash index and B^+ tree index. In particular, discuss how equality and range searches work, using an example?

OR

11 (a) What is the minimum space utilization for a B^+ tree and ISAM index?
(b) Explain why local depth and global depth are needed in Extendible Hashing.

*****