Code: 9A05401

R09

II B. Tech II Semester (R09) Supplementary Examinations, November/ December 2011

DATABASE MANAGEMENT SYSTEMS

(Common to Computer Science & Systems Engineering, Information Technology & Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Let R= {A, B, C, D and E}. FD's= {AB→C, A→D, D→E, AC→B}. List all candidate key, prime attribute and non-prime attribute.
(b) Discuss attribute semantics as an informal measure of goodness for a relation schema.

2 (a) Explain about the remote backup system.
(b) Explain about concept of the buffer management in details.

3 (a) How the concurrency can be controlled using optimistic method Explain?
(b) Explain about database recovery management.

4 (a) List and explain steps to develop an ER diagram for an university.
(b) What is an overlapping subtype? Give an example.

5 What is a relationship? What are the different types of relationships that are used in relational database? Explain with examples.

6 What is RAID? Discuss.

7 (a) Explain object oriented model and network model in degrees of data abstraction.
(b) What are the functionalities of data base administrator?

8 (a) What is an index? What are the operations that are performed on an index?
(b) Write about the conversion functions in advanced SQL.

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Code: 9A05402

R09

II B. Tech II Semester (R09) Supplementary Examinations, November/December 2011

OBJECT ORIENTED PROGRAMMING

(Common to Computer Science & Systems Engineering, Information Technology & Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) What is meant by responsibility? Explain it in detail.
(b) Define class. Write and explain the hierarchy of classes.

2 (a) Write short notes on "this" keyword and garbage collection in java.
(b) Explain the different parameter passing techniques with example programs.

3 (a) What is the use of "final" keyword? Explain with example program.
(b) Give brief description about the abstract classes.

4 (a) What is an interface? How can we implement multiple inheritance in java? Explain.
(b) What is the use of CLASSPATH? Explain.

5 (a) Draw and explain the life cycle of a thread.
(b) Write short notes on java build in exceptions.

6 Explain the different layout managers in detail.

7 (a) Differentiate between applet programming and application programming.
(b) Draw and explain the life cycle of an applet program.

8 (a) Explain in detail about the networking classes and interfaces.
(b) Give brief description about the inetAddress.

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Code: 9A05403 R9

II B. Tech II Semester (R09) Supplementary Examinations, November/December 2011
DESIGN & ANALYSIS OF ALGORITHMS
(Common to Computer Science & Systems Engineering, Information Technology & Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) Discuss in detail about the following:
(i) Bigh Oh (ii) Omega (iii) Theta notations
(b) Differentiate between non recursive and recursive algorithms. Write a non recursive algorithm to find the factorial of a given number.

2 (a) Write algorithms for WeightedUnion and CollapsedFind.
(b) What are bi connected components? Explain them in detail.

3 (a) Discuss about the time complexity of stressen's matrix multiplication.
(b) Write an algorithm for sorting elements by using quick sort technique and discuss about its time complexity.

4 (a) Write short notes on the general method of the greedy technique.
(b) Give brief description about the job sequencing with deadlines.

5 (a) Briefly describe about the All pairs shortest path problem.
(b) Write a short note on reliability design.

6 (a) Discuss in detail about the graph coloring.
(b) Write short notes on Hamiltonian cycles.

7 Consider the traveling salesperson instance defined by the cost matrix.

$$\begin{pmatrix} \propto & 20 & 30 & 10 & 11 \\ 15 & \propto & 16 & 04 & 02 \\ 03 & 05 & \propto & 02 & 04 \\ 19 & 06 & 18 & \propto & 03 \\ 16 & 04 & 07 & 16 & \propto \end{pmatrix}$$

(a) Find the reduced cost matrix.
(b) Draw the state space tree.
(c) Find the minimum cost path.

8 (a) Give brief description about the classes of NP hard and NP complete.
(b) Explain in detail about the decision problem and non deterministic machine.

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Code: 9A05406 R09

II B. Tech II Semester (R09) Supplementary Examinations, November/December 2011

COMPUTER ORGANIZATION

(Common to Electronics & Computer Engineering, Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Explain the basic operational concepts of a computer.
(b) Define Bus in a computer and describe the bus structures of a computer.
(c) Define parity bit: and give the importance of a parity bit in binary codes.

2 (a) A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers.
(i) How many selection inputs are there in each multiplexer?
(ii) What size of multiplexers are needed?
(iii) How many multiplexers are there in the bus?
(b) With example explain about addressing modes.

3 (a) What is the difference between a microprocessor and a microprogram? Is it possible to design a microprocessor without a micro program?
(b) Explain the address sequencing capabilities for control memory.

4 Show the step - by step multiplication process using Booth algorithm for following numbers.
i) (+15)× (-13)
Assume 5-bit registers that hold signed numbers.

5 (a) With a block diagram explain about associative memory and also explain the match logic, read operation and write operation.
(b) Define RAM and how many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes.

6 (a) What is the difference between isolated I/O and memory-mapped I/O? What are the advantages and disadvantages of each?
(b) Define an interrupt and design parallel priority interrupt hardware for a system with 4 interput sources.

7 With example explain about vector processing.

8 (a) Discuss the difference between tighly coupled multiprocessors and loosely coupled multiprocessors.
(b) Briefly explain about interprocessor communication and synchronization.

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Code: 9A05407

R9

II B. Tech II Semester (R09) Supplementary Examinations, November/ December 2011

FORMAL LANGUAGES & AUTOMATA THEORY

(Computer Science & Engineering)

Time: 3 hours Max Marks: 70

Answer any FIVE questions

All questions carry equal marks

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1 (a) Show that language containing strings formed from a, b and c in which the number of a's, number of b's and number of c's are equal is not a CFL.

(b) Prove that the union of two context free languages is also a context free language.

2 (a) Define recursively enumerable languages and recursive languages. Prove that the union of two recursive languages is also recursive.

(b) Design a TM for computing the square of a given positive integer. Show the moves of the TM for a value of 2.

3 Construct CFG for the language recognized by the following PDA.

$\delta(q0, a, Z_0) = (q0, AZ_0)$ $\delta(q0, a, A) = (q0, A)$

$\delta(q0, b, A) = (q1, Є)$ $\delta(q1, Є, Z_0) = (q2, Є)$

For the string aaaab, show the moves of the PDA and the derivation in the grammar.

4 (a) Explain about Chomsky hierarchy of Languages.

(b) Explain in detail about Universal Turing Machine.

5 Draw a DFA that recognizes the language of all strings of 0's and 1's for length ≥ 1 that, if they were interpreted as binary representations of integers, would represent integers evenly divisible by 3. Leading 0's are permissible.

6 (a) Discuss binary the significance of NFA and DFA.

(b) Write about NFA with ε transitions and also discuss the significance of NFA with ε.

7 (a) What is the closure property of regular sets?

(b) What is the relationship between finite automata and regular expression?

(c) Give the R.E for the language such that every string will have atleast one 'a' followed by at least one 'b'.

8 Discuss and explain the following:

a) CFL are not closed under intersection and complementation.

b) A regular grammar generates an empty string.

c) A regular language is also context free but not reverse.

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Code: 9ABS402 R9

II B.Tech II Semester (R09) Supplementary Examinations, November/December 2011
ENVIRONMENTAL SCIENCE
(Common to Civil Engineering, Mechanical Engineering, Computer Science & Engineering, Information Technology, Aeronautical Engineering and Biotechnology)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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1. Discuss the multidisciplinary nature of environmental studies.

2. (a) Write about forest resources use and over exploitation.
   (b) Discuss environmental issues concerning extracting and using mineral resources.

3. (a) Discuss the concept of an ecosystem.
   (b) Discuss about a desert ecosystem.

4. (a) Explain insitu and exsitu conservation of biodiversity.
   (b) Give the biogeographical classification of India.

5. (a) Define nuclear hazard. Give cause, effects and control measures of nuclear hazards.
   (b) Discuss solid waste management of industrial waste.

6. (a) Discuss how rainwater can be harvested in rural and urban areas.
   (b) Write the salient points of 'Forest Conservation Act'.

7. (a) Write about the measures being taken by the government in controlling AIDS.
   (b) Discuss the role of IT in environment and human health.

8. (a) Write about global warming and its effects.
   (b) Discuss about the role of an individual in prevention of pollution.

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