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06AL61

Sixth Semester B.E. Degree Examination, May/June 2010
Management and Enterpreneurship

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. Define management. What are the nature and characteristics of management? Explain its functions. (08 Marks)
   b. Is management a science, art or profession? Explain. (05 Marks)
   c. What are the modern management approaches? Explain briefly the contingency approach of management. (07 Marks)

2 a. What is planning? Explain the steps involved in planning. And give the importance and purpose of planning process. (06 Marks)
   b. Briefly explain the types of planning. (04 Marks)
   c. Explain the process and steps involved in decision – making. (06 Marks)
   d. Explain hierarchy of plans. (04 Marks)

3 a. What are the advantages and disadvantages of line and staff organization? (08 Marks)
   b. Explain the following : i) Types of departmentation ; ii) Principles of committees. (04 Marks)
   c. What are MBO and MBE? Explain. (04 Marks)
   d. What is recruitment? Explain various sources of recruitment. (04 Marks)

4 a. Give principles of directing. Differentiate between autocratic, participative and free – rein styles of leadership. (07 Marks)
   b. Write about Maslow's theory of motivation. Explain MC Gregor's theory x and theory y. (07 Marks)
   c. State and explain the steps in controlling. Explain the methods of establishing sound controlling. (06 Marks)

PART – B

5 a. What is enterpreneurship? Explain its model and types of enterpreneurs. (07 Marks)
   b. Differentiate between enterpreneur, intrapreneur and manager. (07 Marks)
   c. What are the barriers of enterpreneurship? Explain the role of enterpreneur in economic development. (06 Marks)

6 a. Define small scale industry, ancillary industry and tiny industries, with at least four advantages of each. (08 Marks)
   b. Explain the objectives of SSIS and its role in economic development (06 Marks)
   c. Explain GATT and WTO, and its impact on trade. (06 Marks)

7 a. Explain the aims and objectives of KIADB and KSSIDC. (08 Marks)
   b. Explain the following :
      i) NSIC ; ii) DIC single windo agency ; iii) KSFC. (12 Marks)

8 a. Explain the phases of project identification with its sources. (05 Marks)
   b. Explain network analysis. What are the various techniques used for network analysis? (05 Marks)
   c. Explain both PERT and CPM with its advantages and disadvantages. (10 Marks)

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Sixth Semester B.E. Degree Examination, May/June 2010
UNIX Systems Programming

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. What are the major differences between ANSI 'C' and K and R 'C'? Explain with examples.
(08 Marks)
   b. Write a C/C ++ POSIX compliant program that prints the POSIX defined configuration options supported on any given system using feature test macros. (08 Marks)
   c. What is POSIX API? Why is calling an API more time consuming than calling a user function? (04 Marks)

2 a. Explain the different file types available in UNIX or POSIX systems. (08 Marks)
   b. Discuss with a neat diagram the different data structures supported by UNIX Kernel for file manipulation. (08 Marks)
   c. Bring out the differences between hard link and symbolic link. (04 Marks)

3 a. Explain the following APIs along with their prototype definitions :
      i) Open ;   ii) Write ;   iii) Fcntl ;   iv) Fstat. (08 Marks)
   b. What are symbolic link file APIs? Write a C/C++ program to emulate the UNIX Ln command. (08 Marks)
   c. Give the hierarchy structure of the file classes. (04 Marks)

4 a. Write a C/C++ program to demonstrate the use of atexit function. (10 Marks)
   b. Explain briefly the memory layout of C program. (10 Marks)

PART – B

5 a. What is fork and vfork? Explain with a program for each. (10 Marks)
   b. What is a controlling terminal? Explain its characteristics and relation to session and process groups. (10 Marks)

6 a. What is a signal? Explain with a program how to set up a signal handler. (10 Marks)
   b. What is a daemon process? Explain daemon characteristics and basic coding rules.
(10 Marks)

7 a. Explain how FIFO is used in JPC. Discuss with an example the client – server communication using FJFO. (10 Marks)
   b. Explain popen and pclose functions with prototypes and write a program to demonstrate popen and pclose functions. (10 Marks)

8 a. Explain socket addressing, socket creation, connection establishment and data transfer with appropriate APIs. (10 Marks)
   b. What are send and recv socket calls? Explain various flags used with send and recv calls.
(10 Marks)

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Sixth Semester B.E. Degree Examination, May/June 2010
Compiler Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain, with a neat diagram, the phases of a compiler.   **(10 Marks)**
   b. Construct a transition diagram for recognizing unsigned numbers. Sketch the program segment to implement it, showing the first two states and one final state.   **(10 Marks)**

2 a. Explain the left recursion and show how it is eliminated. Describe the algorithm used for eliminating the left recursion.   **(06 Marks)**
   b. Eliminate left recursion from the grammar:
      $S \rightarrow aB \mid aC \mid Sd \mid Se$
      $B \rightarrow bBc \mid f$
      $C \rightarrow g$ **(02 Marks)**
   c. Given the grammar
      $S \rightarrow (L) \mid a$
      $L \rightarrow L, S \mid S$
      i) Make necessary changes to make it suitable for LL(1) parsing.
      ii) Construct FIRST and FOLLOW sets
      iii) Construct the predictive parsing table
      iv) Show the moves made by the predictive parser on the input (a, (a, a))   **(12 Marks)**

3 a. Obtain a set of canonical LR(0) items for the grammar: **(08 Marks)**
      $S \rightarrow L = R$
      $S \rightarrow R$
      $L \rightarrow *R$
      $L \rightarrow id$
      $R \rightarrow L$
   b. Is the grammar in Q3(a) SLR(1)? Give reasons.   **(04 Marks)**
   c. What is handle pruning? Explain with the help of the grammar $S \rightarrow SS + \mid SS* \mid a$ and input string aaa*a+++. Give a bottom-up parse of the given input string.   **(08 Marks)**

4 a. Given the grammar :
      $S \rightarrow AA$
      $A \rightarrow Aa \mid b$
      i) Construct sets of LR(1) items
      ii) Construct canonical LR(1) parsing table.   **(12 Marks)**
   b. Write a note on the Parser generator – Yacc.   **(04 Marks)**
   c. Write the Yacc specification of a simple desk calculator with the following grammar for arithmetic expressions,
      $E \rightarrow E + T \mid T$
      $T \rightarrow T * F \mid F$
      $F \rightarrow (E) \mid digit$
      Where, the token digit is a single digit between 0 and 9.   **(04 Marks)**

PART – B

5 a. Explain the concept of syntax-directed definition. **(04 Marks)**

   b. Consider the context-free grammar given below: **(08 Marks)**

   S → EN
   E → E + T | E – T | T
   T → T * F | T / F | F
   F → (E) | digit
   N → ;

   i) Obtain the SDD for the above grammar.
   ii) Construct the parse tree, syntax tree and annotated parse tree for the input string 5*6 + 7;

   c. Obtain the post-fix SDT for the grammar in Q.5(b) and illustrate the corresponding parser stack implementation. **(08 Marks)**

6 a. Obtain the directed acyclic graph for the expression a + a * (b – c) + (b – c) * d. Also give the sequence of steps for constructing the same. **(06 Marks)**

   b. Translate the arithmetic expression a + –(b + c) into quadruples, triples and indirect triples. **(06 Marks)**

   c. Explain the syntax-directed translation of switch-statements. **(08 Marks)**

7 a. Describe the general structure of an activation record. Explain the purpose of each item in the activation record. **(06 Marks)**

   b. Explain in detail, the strategy for reducing fragmentation in heap memory. **(08 Marks)**

   c. Explain briefly the performance metrics to be considered while designing a garbage collector. **(06 Marks)**

8 a. Discuss the issues in the design of a code generator. **(10 Marks)**

   b. What are basic blocks and how do you partition a three-address-code into basic blocks? **(05 Marks)**

   c. Write the three-address code and construct the basic blocks for the following program segment.
   Sum = 0;
   for (i = 0 ; i < = 10 ; i++)
     Sum = sum + a [i] **(05 Marks)**

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Sixth Semester B.E. Degree Examination, May/June 2010
Computer Networks – II

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain and derive delays in datagram packet switching.   **(10 Marks)**
   b. Consider the network given below in Fig.Q1(b). Use the Dijkstra's algorithm to find shortest paths from all nodes to destination node 2.   **(10 Marks)**

Fig.Q1(b)

2 a. Explain the FIFO and priority queue scheduling for managing traffic at packet level.
                                                                                  (10 Marks)
   b. Explain the leaky bucket algorithm for policing the traffic at flow level.   **(10 Marks)**

3 a. Explain the IP address classification. Identify the following IP addresses and their address class:
   200.58.20.165   128.167.23.20   16.196.128.50   150.156.10.10   **(10 Marks)**
   b. Give the format of IPV6 basic header. Explain the importance.   **(10 Marks)**

4 a. Explain the OSPF protocol and its operation.   **(10 Marks)**
   b. Give the structure of ATM cell header and details of QOS parameters.   **(10 Marks)**

PART – B

5 a. Which are the different data types used in the structure of management information?
                                                                                  (10 Marks)
   b. Give the comparison between public key and secret key crypto graphic systems.   **(10 Marks)**

6 a. Explain VPN and its types based on tunneling.   **(10 Marks)**
   b. Explain the need for overlay networks and P2P connection.   **(10 Marks)**

7 a. Explain the JPEG compression method and still image processing.   **(10 Marks)**
   b. Explain the session initiation protocol.   **(10 Marks)**

8 a. With an example, explain the dynamic source routing protocol.   **(10 Marks)**
   b. List the security issues in ad-hoc networks. Explain types of attacks.   **(10 Marks)**

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Sixth Semester B.E. Degree Examination, May/June 2010
Computer Graphics and Visualization

Time: 3 hrs.   Max. Marks:100

**Note: *Answer any FIVE full questions, selecting
at least TWO questions from each part.***

PART – A

1 a. Discuss the applications of computer graphics. **(04 Marks)**
   b. Giving the block diagram, explain the high-level view of a graphics system. **(06 Marks)**
   c. Explain the different graphics architectures. **(06 Marks)**
   d. Write a fragment of a simple program in pen plotter model that would generate the output shown in Fig.Q1(d). **(04 Marks)**

Fig.Q1(d)
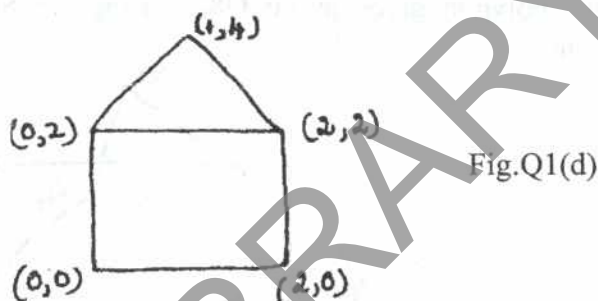
2 a. Write a typical main function that works for moot non-interactive applications and explain each function call in it. **(10 Marks)**
   b. Explain the major groups of graphics functions. **(07 Marks)**
   c. Differentiate additive color model from subtractive color model. **(03 Marks)**

3 a. What are the major characteristics that describe the logical behaviour of an input device? Explain how open GL provides the functionality of each of the classes of logical input devices. **(08 Marks)**
   b. What is a display list? Give the open GL code segment that generates a display list defining a red triangle with vertices at (50, 50), (150, 50) and (100, 150). **(07 Marks)**
   c. What is double buffering? How is it implemented in open GL? **(05 Marks)**

4 a. Explain the different open GL frames. **(07 Marks)**
   b. Explain bilinear interpolation method of assigning colors to points inside a quadrilateral. **(06 Marks)**
   c. Explain the properties that ensure that a polygon will be displayed correctly. **(03 Marks)**
   d. Explain the following: **(04 Marks)**
      i) Point-vector addition   ii) Homogeneous coordinates.

PART – B

5 a. Explain the basic transformations in 3D and represent them in matrix form. **(07 Marks)**
   b. What are the entities required to perform a rotation? Show that two rotations about the same axis commute. **(07 Marks)**
   c. What is concatenation? How does it affect the efficiency of transformations? **(04 Marks)**
   d. What are the advantages of quaternions? **(02 Marks)**

6 a. Bring out the differences between perspective and parallel projections. (07 Marks)
 b. Derive the simple perspective projection matrix. (05 Marks)
 c. What is projection normalization? (03 Marks)
 d. Explain the z – buffer algorithm giving its pseudo code. (05 Marks)

7 a. What are the various methods available for shading a polygonal mesh? (07 Marks)
 b. Write the open GL code segment to approximate a sphere using subdivision. (05 Marks)
 c. Explain the different types of light sources supported by open GL. (08 Marks)

8 a. Use the Liang Barsky line – clipping algorithm to clip the line $P_1(-15, -30)$ to $P_2(30, 60)$ against the window having diagonally opposite corners at $(0, 0)$ and $(15, 15)$. (07 Marks)
 b. Digitize the line from $(10, 16)$ to $(16, 12)$ using the DDA algorithm. (06 Marks)
 c. Clip the polygon given in Fig.Q8(c) using the Sutherland Hodgeman polygon clipping algorithm. (07 Marks)
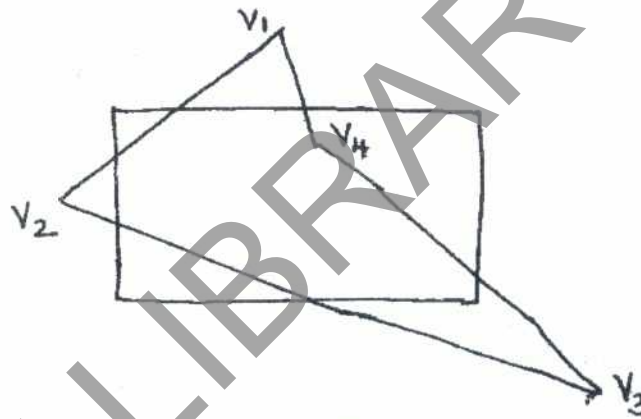

Fig.Q8(c)

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Sixth Semester B.E. Degree Examination, May/June 2010
Compiler Design

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting
at least TWO questions from each part.*

PART – A

1 a. With a neat diagram, explain the different phases of a compiler. **(10 Marks)**
   b. Explain the need for multiple passes in compilers. **(06 Marks)**
   c. Discuss the various issues of lexical analysis. **(04 Marks)**

2 a. What is left factoring and left recursion elimination? Explain it for the following example:
   $E \rightarrow E + T \mid T$
   $T \rightarrow id \mid id [ ] \mid id [X]$
   $X \rightarrow E, E \mid E$ **(10 Marks)**
   b. Construct a transition diagram to accept the set of tokens given below:
   Unsigned numbers,   identifier **(05 Marks)**
   c. For the given grammar:
   $S \rightarrow a \mid \uparrow \mid (T)$
   $T \rightarrow T, S \mid S$
   give leftmost and rightmost derivation for the sentence : $(((a, a,), \uparrow, (a, a)), a)$ **(05 Marks)**

3 a. Define First and Follow. Determine First and Follow sets for the grammar:
   stmt – sequence $\rightarrow$ stmt stmt – seq'
   stmt – seq' $\rightarrow$; stmt – sequence $\mid \in$
   stmt $\rightarrow$ s **(06 Marks)**
   b. For the given grammar, construct LL(1) parsing table:
   Statement $\rightarrow$ if – stmt | other
   if – stmt $\rightarrow$ if (exp) statement else – part
   else – part $\rightarrow$ else statement $\mid \in$
   exp $\rightarrow$ 0 | 1 **(08 Marks)**
   c. Explain with an example, the stack implementation of shift reduce parser. **(06 Marks)**

4 a. For given grammar, construct SLR(1) parsing table:
   $S \rightarrow (S) S \mid \in$ **(08 Marks)**
   b. For the given grammar, construct LALR(1) parsing table:
   $S \rightarrow CC$
   $C \rightarrow cC \mid d$ **(12 Marks)**

PART – B

5 a. Briefly explain the concept of syntax directed translation scheme, with an example. **(10 Marks)**
   b. For the SDD given below, construct annotated parse tree for the input:
   Float a, b, c ;
   $D \rightarrow TL$;
   $T \rightarrow int \mid float$;
   $L \rightarrow L, id \mid id$ **(10 Marks)**

6 a. What is dependency graph? Explain with an example. (08 Marks)

   b. What is Three-address code? List the common Three-address instruction forms. Translate the following into Three-address code:

   $S \rightarrow id = E$;

   $E \rightarrow E_1 + E_2 \mid -E_1 \mid (E_1) \mid id$ (12 Marks)

7 a. Explain in detail the different storage allocation strategies. (10 Marks)

   b. Briefly explain the main issues in code generation. (10 Marks)

8 a. Explain briefly Dead code elimination. (06 Marks)

   b. What are basic blocks? For the given intermediate code, generate the flow graph: (06 Marks)

   $i = 1$

   $j = 1$

   $t_1 = 10 * i$

   $t_2 = t_1 + j$

   $t_3 = 8 * t_2$

   $t_4 = t_3 - 88$

   $a[t_4] = 0.0$

   $j = j + 1$

   if $j <= 10$ go to (3)

   $i = i + 1$

   if $i <= 10$ go to (2)

   $i = 1$

   $t_5 = i - 1$

   $t_6 = 88 * t_5$

   $a[t_6] = 1.0$

   $i = i + 1$

   if $i <= 10$ go to (13)

   c. Write a note on Peep hole optimization, with an example. (08 Marks)

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Sixth Semester B.E. Degree Examination, May/June 2010
Operations Research

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Explain the following :
    i)   Origin, nature and impact of OR.
    ii)   Defining the problem and gathering the data.   **(10 Marks)**
   b. A farmer has to plant two kinds of trees P and Q in a land of 4000 sq.m. area. Each P tree requires at least 25 sq.m and Q tree requires at least 40 sq.m. of land. The annual water requirements of P tree is 30 units and of Q tree is 15 units per tree, while at most 3000 units of water is available. It is also estimated that the ratio of the number Q trees to the number of P trees should not be less than $\frac{6}{19}$ and should not be more than $\frac{7}{8}$. The return per tree from P is expected to be one and half times as mush as from Q tree.
       Formulate the problem as a LP model.   **(10 Marks)**

2 a. Solve the following LPP by simplex method :
       Maximize $Z = 3x_1 + 2x_2$
       Subject to $x_1 + x_2 \le 4$,
                  $x_1 - x_2 \le 2$
                  $x_1, x_2 \ge 0$ **(10 Marks)**
   b. Solve the following LPP by simplex method :
       Maximize $Z = 6x_1 + 8x_2$
       Subject to $2x_1 + 8x_2 \le 16$
                  $2x_1 + 4x_2 \le 8$
                  $x_1, x_2 \ge 0$ **(10 Marks)**

3 a. Explain in detail the computer implementation of simplex method and available software option for linear programming.   **(10 Marks)**
   b. Explain the postoptimality analysis of linear programming.   **(05 Marks)**
   c. Explain the two phase technique procedure of solve LPP in simplex method. **(05 Marks)**

4 a. Explain the relation between the solution of the primal and the dual. **(05 Marks)**
   b. Find the dual of the following problem :
       Minimize $Z = 2x_2 + 5x_3$
       Subject to $x_1 + x_2 \ge 2$
                  $2x_1 + x_2 + 6x_3 \le 6$
                  $x_1 - x_2 + 3x_3 = 4$
                  $x_1, x_2, x_3 \ge 0$ **(05 Marks)**
   c. Explain the computational procedure of revised simplex method in standard form. **(10 Marks)**

PART – B

5 a. Use dual simplex method and solve the following LPP :
       Minimize $Z = 3x_1 + x_2$
       Subject to $x_1 + x_2 \geq 1$
       $\qquad\qquad 2x_1 + 3x_2 \geq 2$
       $\qquad\qquad x_1, x_2 \geq 0$ (10 Marks)

   b. Explain the role of duality theory in sensitivity analysis.   (05 Marks)

   c. Explain how sensitivity analysis has been applied.   (05 Marks)

6 a. Find an initial solution to the following transportation problem :

Destination

		D_1	D_2	D_3	D_4	D_5		
	O_1	7	6	4	5	9	40	
Origin	O_2	8	5	6	7	8	30	Supply
	O_3	6	8	9	6	5	20	
	O_4	5	2	7	8	6	10	
		30	30	15	20	5		

Demand

(10 Marks)

   b. The owner of a small machine shop has four machines available to assign for the jobs. Five
       jobs are offered to assign, with the expected profits in hundreds of rupees for each machine
       on each job being as follows :

Job

		1	2	3	4	5
	A	6.2	7.8	*	10.1	8.2
Machines	B	7.0	8.4	6.5	7.5	6.0
	C	8.7	9.2	11.1	7.0	8.2
	D	*	6.4	8.7	7.7	8.0

       * indicates that machine A and D cannot perform the jobs 3 and 1 respectively. Find the
       assignment of jobs to machines that will result in the maximum profit.   (10 Marks)

7 a. Solve the following game graphically :   (10 Marks)

Player B

		B_1	B_2	B_3
Player A	A_1	2	6	22
	A_2	16	10	4

   b. Explain in detail decision making without experimentation.   (05 Marks)

   c. Explain the details of solving simple games in game theory.   (05 Marks)

8 a. Explain in detail, the minimum spanning tree problem with constraints.   (06 Marks)

   b. Outline the general procedure for generating a child from a pair of parents. (06 Marks)

   c. Explain the number of details that need to be worked out to fit structure of the problem.
                                                                                    (08 Marks)

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Sixth Semester B.E. Degree Examination, May/June 2010
File Structures

Time: 3 hrs.

Max. Marks:100

Note: *Answer any FIVE full questions,*
selecting at least TWO questions from each part.

PART – A

1   a. Describe the relation between the physical file and the logical file.   (04 Marks)
     b. Briefly explain the different basic ways to organize the data on a disk.   (10 Marks)
     c. Calculate the space required on tape, if we want to store the 1 million 100 bytes records on a 7250 bpi tape, that has an internal block gap of 0.2 inches and with a blocking factor of 60. Hence calculate the space required.   (06 Marks)

2   a. What are the different ways of adding structures to a file to maintain the identity of records? Explain each with examples.   (10 Marks)
     b. Define the following terms :
         i) File-access method   ii) Meta-data   iii) RRN   iv) Template class.   (04 Marks)
     c. Design an algorithm for sequential – search.   (06 Marks)

3   a. Define data compression. Explain irreversible compression techniques.   (06 Marks)
     b. Explain the key-sorting techniques and their limitations.   (06 Marks)
     c. What is meant by an index? Explain the operations required to maintain the index files.   (08 Marks)

4   a. Explain the object-oriented model for implementing co-sequential process.   (10 Marks)
     b. Briefly explain the different methods used to sort files on a tape.   (10 Marks)

PART – B

5   a. Define a B-tree. Explain the creation of a B-tree, with examples.   (10 Marks)
     b. Explain deletion, merging and redistribution of elements in a B-tree.   (10 Marks)

6   a. Explain the block splitting and merging due to insertion and deletion in the sequence set, with examples.   (10 Marks)
     b. Explain the simple-prefix B+ tree.   (05 Marks)
     c. Compare the strengths and weakness of B+ trees and B-tress.   (05 Marks)

7   a. Define hashing. Explain a simple hashing algorithm.   (10 Marks)
     b. Explain the double hashing and chained progressive overflow collision resolution techniques.   (10 Marks)

8   a. Explain the working of extendible hashing.   (10 Marks)
     b. Construct a procedure for finding buddy-buckets.   (05 Marks)
     c. Explain the briefly the linear-hashing method.   (05 Marks)

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Sixth Semester B.E. Degree Examination, May/June 2010
Information Systems

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. What is an information system? What are the classifications of information systems? Explain. **(10 Marks)**

   b. Explain the different modules in a systematic development process for developing information system solutions. **(10 Marks)**

2 a. Explain with a neat figure, the business competitive strategies and competitive forces that appear in the market place. **(10 Marks)**

   b. How customer focused business builds a customer value and loyalty using internet technology? Explain. **(10 Marks)**

3 a. With the help of a neat figure, explain the enterprise application architecture illustrating the major cross functional enterprise applications and their interrelationships. **(10 Marks)**

   b. Explain the case study of introduction of On Q system at Hilton Hotels corporation – data driven hospitality. **(10 Marks)**

4 a. What is CRM? Explain the three phases of CRM. **(08 Marks)**

   b. What is ERP? What are the benefits and challenges of ERP? **(06 Marks)**

   c. What is SCM? What are the objectives of SCM? **(06 Marks)**

PART – B

5 a. Explain the key factors for success in E-commerce. **(14 Marks)**

   b. Differentiate between B2C E-commerce and B2B E-commerce. **(06 Marks)**

6 a. What is DSS? With a neat block diagram, explain the web-enabled marketing DSS. **(10 Marks)**

   b. What are the four basic types of analytical modeling activities used in DSS? Explain each with an example. **(10 Marks)**

7 a. Briefly explain the most important technology ethics, software piracy and issues. **(10 Marks)**

   b. Explain the important security measures adopted in several companies in today's networked business enterprises. **(10 Marks)**

8 a. With a neat block diagram, explain the three major components of information technology management. **(08 Marks)**

   b. Write short notes on:
     i)   Global IT management
     ii) Global business / IT strategies and applications
     iii) Global data access issues. **(12 Marks)**

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