USN | | | | | | | | | | **10AL61**

Sixth Semester B.E. Degree Examination, June/July 2017
Management and Entrepreneurship

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a.   Define "Management" and outline its essential characteristics.   **(06 Marks)**
    b.   Discuss the various required managerial skills with reference to the skill–mix diagram for different management levels.   **(06 Marks)**
    c.   Briefly describe the general principles of administrative management theory as laid down by Henri Fayal.   **(08 Marks)**

2   a.   What is planning? Discuss the importance of planning.   **(06 Marks)**
    b.   Explain the hierarchy of plans with a neat sketch.   **(08 Marks)**
    c.   Discuss programmed and non-programmed decisions with a neat sketch.   **(06 Marks)**

3   a.   Explain the process of organizing.   **(06 Marks)**
    b.   Discuss the guidelines for making committees effective.   **(06 Marks)**
    c.   Explain the process of recruitment and selection of managerial personnel in an organization.   **(08 Marks)**

4   a.   Explain briefly the important principles of an effective direction.   **(08 Marks)**
    b.   Write a note on Maslow's Hierarchy of needs theory of motivation.   **(06 Marks)**
    c.   "Budgeting is an instrument of planning as well as a tool of managerial control", comment.   **(06 Marks)**

PART – B

5   a.   Discuss the concept of entrepreneur as a risk bearer, as an organizer and as an innovator.
                                                                                              (06 Marks)
    b.   Describe the various stages in entrepreneurial process.   **(08 Marks)**
    c.   What are the barriers to entrepreneurship? Explain.   **(06 Marks)**

6   a.   Explain the characteristics of small scale industries.   **(06 Marks)**
    b.   Explain the various important steps in establishing a small scale industry with a flow–chart.
                                                                                              (08 Marks)
    c.   Discuss the effects of WTO on small scale industries in India.   **(06 Marks)**

7   a.   Explain the important activities and functions of SISI(MSME–DI).   **(08 Marks)**
    b.   Write a note on KIADB.   **(06 Marks)**
    c.   Discuss the organizational structure and functions of DIC.   **(06 Marks)**

8   a.   Explain the process of identification and selection of a suitable project.   **(10 Marks)**
    b.   Explain the common errors in project reports.   **(10 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
UNIX System Programming

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　Max. Marks:100

Note: *Answer any FIVE full questions, selecting atleast 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.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(07 Marks)
　b. Write C/C++ POSIX compliant program to check the following limits :
　　　i) Number of clock ticks
　　　ii) Maximum number of child processes
　　　iii) Maximum path length
　　　iv) Maximum number of characters in a filename.　　　(07 Marks)
　c. What do you mean by the term feature test macros? List all the test macros along with their meaning.　　　　　　　　　　　　　　　　　　　　　　　(06 Marks)

2　a. Differentiate between C stream pointers and file descriptors.　　(04 Marks)
　b. Explain the UNIX kernel support for files with a neat diagram.　(10 Marks)
　c. Differentiate between hard links and symbolic links with examples.　(06 Marks)

3　a. What is an API? Explain why calling an API is more time – consuming than calling a user – defined function.　　　　　　　　　　　　　　　　　　　　　(04 Marks)
　b. Explain the following API's with prototypes : i) open ii) lseek iii) fcntl.　(12 Marks)
　c. Write a C/C++ program to emulate *ln* command in UNIX.　　(04 Marks)

4　a. With a neat diagram, explain the memory layout of a C program for the given C program, identify the various segments when the program is executed :
```
#include <stdio.h>
int a = 5; int b ; int data[10] ;
const int i = 5;
int main( )
{
  int x;
  char *ptr = malloc(50);
  return 0;
}
```
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(10 Marks)
　b. Explain in detail with prototypes the C functions for memory allocation.　(07 Marks)
　c. Mention the rules to change the resource limits.　　　　　　(03 Marks)

PART – B

5　a. What is a race condition? Write the program for generating race condition and to avoid the race condition.　　　　　　　　　　　　　　　　　　　　　(08 Marks)
　b. In UNIX, explain the freopen function. Write a C/C++ program to implement the freopen function.　　　　　　　　　　　　　　　　　　　　　　　(08 Marks)
　c. What is job control? What are the three forms of support from the OS required for job control?　　　　　　　　　　　　　　　　　　　　　　　　　　(04 Marks)

6 a. What is a signal? Discuss any five POSIX–defined signals. Explain how to set up a signal handler. **(10 Marks)**
   b. What are daemon processes? List their characteristics. Write a program to transform a normal user process into a daemon process. Explain every step in the program. **(10 Marks)**

7 a. What is FIFO? Explain how it is used in IPC. Discuss with an example, the client–server communication using FIFOs. **(10 Marks)**
   b. What are semaphores? What is their purpose? List and explain the APIs used to create and control the semaphores. **(10 Marks)**

8 a. Which is the fastest form of IPC? Explain. **(10 Marks)**
   b. Explain STREAMs – based pipes. Write a C function that is used by a server to wait for a client's connect request to arrive. **(10 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
Compiler Design

Time: 3 hrs.   Max. Marks:100

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

PART – A

1 a. List the phases of compiler in order. Use these phases to translate a = bc*cd + 50.00 into the target code in assembly language. **(08 Marks)**
   b. What are the applications of compiler? Explain. **(08 Marks)**
   c. Write the regular definition and transition diagram for valid unsigned number. **(04 Marks)**

2 a. Why it is necessary for regular expression to define the lexical syntax of a languages? Give reasons. **(04 Marks)**
   b. Define ambiguity. Is the following grammar ambiguous? If yes remove the ambiguity and rewrite the grammar

   <stmt> → if <expr> then <stmt>

   ¦ if <expr> then <stmt> else <stmt>

   ¦ a

   <expr> → b **(08 Marks)**
   c. Find the FIRST and FOLLOW set for the following grammar **(05 Marks)**

   $E \rightarrow TX$

   $T \rightarrow (E)/ \text{int } Y$

   $X \rightarrow +E/ \in$

   $Y \rightarrow *T/ \in$

   Fig. Q2 (c)
   d. When we say that the grammar G is LL(1) grammar? **(03 Marks)**

3 a. Write an algorithm to construct predictive parser table. Construct a predictive parser table for grammar given in Fig. Q2 (c), and parse the string w = int. **(12 Marks)**
   b. Define handle, handle pruning with example. **(03 Marks)**
   c. What are the actions a shift-reduce parser makes? Write the parse tree and shift-reduce

   configurations for the derivation $S \overset{*}{\Rightarrow} \alpha BxAz \Rightarrow \alpha Bxyz \Rightarrow \alpha rxyz$. **(05 Marks)**

4 a. Write a schematic of LR parser. Write the canonical collection of set of LR(0) items and SLR parsing table for the following grammar:

   $E \rightarrow E+T/T$

   $T \rightarrow T*F/F$

   $F \rightarrow (E)/id$ **(14 Marks)**
   b. Construct LR(1) goto graph for below grammar:

   $X \rightarrow YZ/a$

   $Y \rightarrow bZ/ \in$

   $Z \rightarrow \in$ **(06 Marks)**

PART – B

5 a. Define synthesized attribute, inherited attributes and attribute grammar. **(03 Marks)**

   b. Write a SDD and annotated parse tree for u*s for below grammar suitable for top-down parser.

   $T \rightarrow T * F / F$

   $F \rightarrow digits$ **(07 Marks)**

   c. Construct a syntax tree for expression a+b–c using the grammar

   $E \rightarrow E + T / E - T / T$

   $T \rightarrow (E) / id / num$ **(06 Marks)**

   d. What is the need for eliminating left –recursion? Eliminate left recursion from SDT

   $E \rightarrow E + T\{print('+')\}$

   $E \rightarrow T$ **(04 Marks)**

6 a. Which are the common three address instruction forms? Explain. **(09 Marks)**

   b. Define jumping code. Translate the following code to jumping code:

   if $(X < 10 \ || \ X > 20 \ \&\& \ X = Y) \ X = 1$ **(05 Marks)**

   c. Translate the following switch statement to intermediate code.

   Switch (E) {

           Case V_1 : S_1 break ;

           Case V_2 : S_2 break ;

           .

           .

           .

           Case V_{n-1} : S_{n-1} break ;

           Default : S_n

   } **(06 Marks)**

7 a. Write the possible activations and activation tree corresponding to quick sort call quicksort (1, 9). **(06 Marks)**

   b. What are the basic functions and properties of memory management? Explain locality in program in detail. **(08 Marks)**

   c. What is garbage collection? What are the performance metric that must be considered when designing a garbage collector? **(06 Marks)**

8 a. Write intermediate code and flow graph for below code

           for i from 1 to 10 do

             for J from 1 to 10 do

           a[i, J] = 0.0

           for i from 1 to 10 do

           a[i, i] = 1.0 **(10 Marks)**

   b. What is the need for optimization? List and explain any three local optimization methods. **(10 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
Computer Networks – II

Time: 3 hrs. Max. Marks:100

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

PART – A

1. a. Why is packet switching more suitable than message switching for interactive applications? Compare the delays in datagram packet switching and message switching. **(06 Marks)**
   b. Define routing and forwarding. What are the goals of a routing algorithm? Discuss about flooding. **(06 Marks)**
   c. Develop an algorithm to find shortest paths from a node to all nodes of a graph. Determine shortest path from node five (5) to other nodes in a given graph. Fig.Q1(c). **(08 Marks)**
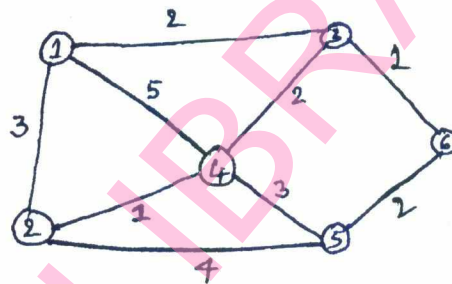

Fig.Q1(c)

2. a. Explain fair queuing for the traffic management at the packet level. Deduce formula for calculating finish tags for fair and weighted fair queuing. **(06 Marks)**
   b. Write note on : i) admission control   ii) traffic shaping. **(06 Marks)**
   c. With a flowchart explain the function of leaky bucket algorithm. How dual leaky bucket principle works? **(08 Marks)**

3. a. How subnet addressing helps IP addressing? For an IP address 211·212·202·101/28 find the subnet address and range of IP addresses. **(06 Marks)**
   b. Explain how migration from IPV4 to IPV6 is done. **(06 Marks)**
   c. With a neat diagram give the purpose of each component of IPV4 header. Which are the five classes of IP addresses? Where are those addresses used? **(08 Marks)**

4. a. Give the general structure of TCP segment and write the purpose of each element in it. **(06 Marks)**
   b. Explain the steps involved in mobile IP routing. **(06 Marks)**
   c. Show how TCP connection is established using three way handshaking? Why unique initial sequence number is needed for each new connection? **(08 Marks)**

PART – B

5 a. Explain how recursive and iterative mapping of IP addresses are done in DNS servers.
   (06 Marks)
   b. Briefly explain the steps of DES algorithm. (06 Marks)
   c. Which are the types of attacks that can occur on an internet infrastructure? Explain.
   (08 Marks)

6 a. Give the overview of the integrated services QoS. (06 Marks)
   b. Explain MPLS. Which are the additional capabilities added to IP network by MPLS.
   (06 Marks)
   c. What is a VPN? How remote – access and site – to – site VPN works? (08 Marks)

7 a. Explain Lempel – Ziv and run–length encoding. Give examples. (06 Marks)
   b. Give the overview of SIP. (06 Marks)
   c. Discuss about H·323 protocol. With a diagram explain H·323 connection. (08 Marks)

8 a. Give the steps of DEEP clustering algorithm. How it differs from other clustering protocols?
   (06 Marks)
   b. Write a note on security of Ad-hoc networks. (06 Marks)
   c. Explain intra-cluster and inter cluster routing protocols. (08 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2017
Computer Graphics & Visualization

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Briefly explain applications of computer Graphics. **(08 Marks)**
   b. Explain the process of image formation with pinhole camera as example. Derive the expression for angle of view. **(12 Marks)**

2 a. Write an OpenGL program to recursively subdivide a tetrahedron to form 3D Sierpinski gasket. **(10 Marks)**
   b. Explain the seven major groups of functions of a good API. **(05 Marks)**
   c. Briefly explain various polygon types in OpenGL. **(05 Marks)**

3 a. Enlist the features of a good interactive program. **(06 Marks)**
   b. How pop-up menus are created using GLUT? Illustrate with an example. **(10 Marks)**
   c. What is double buffering? Explain the advantages of double buffering. **(04 Marks)**

4 a. What are vertex arrays? Show how vertex arrays can be used to represent a cube in OpenGL. **(10 Marks)**
   b. A square in a two dimensional system is specified by its vertices (6, 6), (10, 6), (10, 10) and (6, 10). Implement the following by its first finding a composite transformation matrix for the sequence of transformation involved. Sketch the original and transformed square.
      (i)   Rotate the square by 45˚ about its vertex (6, 6)
      (ii) Scale the original square by a factor of 2 about its centre. **(10 Marks)**

PART – B

5 a. Obtain the matrix representation for rotation of a point about an arbitrary axis in a 3D space. **(10 Marks)**
   b. Show that the following three dimensional sequences are commute:
      (i)   A rotation and a uniform scaling.
      (ii) Two rotations about the same axis. **(10 Marks)**

6 a. Briefly explain the prespective and parallel views in OpenGL. Give example. **(10 Marks)**
   b. What is mesh? With example explain how meshes are generated. Give OpenGL code. **(10 Marks)**

7 a. Describe the Phong lightening model. What are its advantages? **(10 Marks)**
   b. Briefly explain the different types of light sources supported by OpenGL. **(10 Marks)**

8 a. Use Liang Barsky line clipping algorithm to clip a line from starting point (30, 15) and ending at point (65, 35) against the window having its lower left corner at (40, 10) and upper right corner at (75, 25) **(10 Marks)**
   b. Use Bresenham's line algorithm to digitalize a line from point (0, 0) to point (6, 4). **(10 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
File Structures

Time: 3 hrs.   Max. Marks: 100

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

PART – A

1 a. With an example bring out the differences between physical file and logical file. **(04 Marks)**
   b. Suppose it is needed to store a back up of a large file with 1 million records of 100 bytes records on a 7500 bpi tape that has an internal gap of 0.1″ and with a blocking factor of 60. Calculate effective recording density. **(06 Marks)**
   c. Bring out the differences between constant linear velocity and constant angular velocity. Justify how constant linear velocity is more suitable for audio CD. **(06 Marks)**
   d. With suitable example, explain how seeking is done using CH streams. **(04 Marks)**

2 a. What are the different ways of adding structures to a file to maintain the identity of records? Explain each with an example. **(10 Marks)**
   b. Design and develop a program in C++ to read a series of names, one per line, from a file and write out those names spelled in reverse order to another file. Do not use strrev ( ) function. **(10 Marks)**

3 a. Discuss the limitations of secondary key index. Explain "linking the list of reference" technique to overcome the limitation. **(10 Marks)**
   b. Briefly explain with example how spaces can be reclaimed dynamically in fixed length record file. **(07 Marks)**
   c. What are the limitations of keysort method? **(03 Marks)**

4 a. Apply K-way merge technique for merging large number of lists. Demonstrate with an example. **(10 Marks)**
   b. Using co-sequential match based on a single loop, demonstrate intersection of two lists. **(10 Marks)**

PART – B

5 a. What is B-tree? With example explain the following operations in B-tree:
     (i)   Deletion   (ii)   Merging   (iii)   Redistribution. **(10 Marks)**
   b. Construct a B-tree for the following set of keys : (order 4). Show every step clearly.
     C G J X N S U O A E B H I F K L Q R T V **(10 Marks)**

6 a. Compare the strengths and weakness of B+ trees and B-trees. **(05 Marks)**
   b. Write short notes on indexed sequential access. **(05 Marks)**
   c. Explain the simple prefix B+ tree and its maintenance. **(10 Marks)**

7 a. What is Hashing? Write an hashing algorithm and explain with an example. **(10 Marks)**
   b. Suppose you have a file with 8000 records, 2000 address bucket size 5, in which 20% of the records account for 80% of the access. When the file is loaded you load the active 20% of the records first. After the active 20% of the records are loaded and before the other records are loaded, what is the packing density of the partially filled file? Using this packing density compute the percentage of the active 20% that would be overflow records. Comment on the results. **(10 Marks)**

8 a. Explain how extendible hashing works. **(10 Marks)**
   b. Write short notes on dynamic hashing and linear hashing. **(10 Marks)**

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Sixth Semester B.E. Degree Examination, June/July 2017
Software Testing

Time: 3 hrs.   Max. Marks:100

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

PART – A

1   a. Explain the two fundamental approaches used to identify test cases.   (08 Marks)
    b. Define the terms : i) error ii) fault   iii) failure   iv) incident   v) test case.   (05 Marks)
    c. Write pseudo-code for commission problem.   (07 Marks)

2   a. Explain weak robust and strong robust equivalence class testing, considering example of next date problem.   (08 Marks)
    b. Explain decision table and its technique to solve triangle problem.   (08 Marks)
    c. Write short note on worst case testing.   (04 Marks)

3   a. Explain different test case coverage metrics.   (08 Marks)
    b. Explain different define/use testing definitions.   (10 Marks)
    c. Draw diagram for data flow coverage metrics of Rapps/Weyuker.   (02 Marks)

4   a. Explain traditional view of testing levels and rapid prototyping life cycles. (10 Marks)
    b. With an example, explain top-down integration and bottom-up integration.   (06 Marks)
    c. Explain the terms : i) source node ii) sink node iii) module execution path iv) MM-path.
                                                                                     (04 Marks)

PART – B

5   a. Explain the basic concepts of requirements specification.   (10 Marks)
    b. Explain static interactions in a single processor and static interactions in multiple processors.
                                                                                     (06 Marks)
    c. Write note on client/server testing.   (04 Marks)

6   a. Explain : i) degrees of freedom ii) sensitivity iii) redundancy iv) restriction v) partition.
                                                                                     (10 Marks)
    b. With a neat diagram, explain the validation and verification activities check work product against actual user requirements.   (10 Marks)

7   a. Explain in detail mutation analysis and variations on mutation testing.   (10 Marks)
    b. Write note on :   i) Test oracles   ii) Capture and replay.   (06 Marks)
    c. What is scaffolding? Explain.   (04 Marks)

8   a. Write note on :
       i) Risk planning
       ii) Improving the process
       iii) Organizing documents
       iv) Monitoring the process
       v) Test design specification documents.   (10 Marks)
    b. Describe dependability properties in detail.   (10 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2017
Operations Research

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Define operations research. Explain the phases of operations research. **(08 Marks)**

   b. A firm can be produced 3 types of body sweaters say A, B and C. Three kinds of wool are required for it, say red wool, green wool and blue wool. One unit of type A sweater needs 2 yards of red wool and 3 yards of blue wool, one unit of type B sweater needs 3 yards red wool 2 yards of green wool and 2 yards of blue wool. One unit of type C sweater needs 5 yards of green wool and 4 yards of blue wool. The firm has only a stock of 80 yards of red wool, 100 yards of green wool and 150 yards of blue wool. It is assumed that the income obtained from each unit of type A sweater is Rs. 30, type B sweater is Rs. 50 and type C sweater is Rs. 40. Formulate this problem as LPP. **(05 Marks)**

   c. Using graphical method solve the following :
   Maximize $Z = 3000x_1 + 2000x_2$
   Subject to $\quad x_1 + 2x_2 \le 6$
   $\qquad\qquad 2x_1 + x_2 \le 8$
   $\qquad\qquad x_2 \le 2$
   $\qquad\qquad -x_1 + x_2 \le 1$
   and $x_1, x_2 \ge 0$. **(07 Marks)**

2 a. Explain the setting up of simplex method. **(04 Marks)**

   b. Using Simplex method , solve the following LPP taking
   $x_1 = y_1 + 10, \quad x_2 = y_2 + 20$ and $x_3 = y_3 + 30$, the LPP becomes.
   Maximize $Z = 10y_1 + 15y_2 + 8y_3 + 640$
   Subject to $\qquad y_1 + 2y_2 + 2y_3 \le 90$
   $\qquad\qquad 2y_1 + y_2 + y_3 \le 150$
   $\qquad\qquad 3y_1 + y_2 + 2y_3 \le 70$
   and $y_1, y_2, y_3 \ge 0$. **(13 Marks)**

   c. Why Simplex method is better than graphical method? **(03 Marks)**

3 a. Using Big-M method solve the following LPP :
   Maximize $Z = 2x_1 + x_2$
   Subject to $3x_1 + x_2 = 3$
   $\qquad\qquad 4x_1 + 3x_2 \ge 6$
   $\qquad\qquad x_1 + 2x_2 \le 4$
   $\qquad\qquad x_1, x_2 \ge 0$. **(08 Marks)**

   b. Using Two-phase method solve the LPP :
   Maximize $Z = -4x_1 - 3x_2 - 9x_3$
   Subject to $\qquad 2x_1 + 4x_2 + 6x_3 \ge 15$
   $\qquad\qquad 6x_1 + x_2 + 6x_3 \ge 12$
   and $\quad x_1, x_2\, x_3 \ge 0$. **(12 Marks)**

4 a. Explain the computational procedure of revised Simplex method in standard form.

(08 Marks)

   b. Using revised Simplex method solve the following LPP :
   Minimize $Z = x_1 + x_2$
   Subject to $x_1 + 2x_2 \geq 7$
   $4x_1 + x_2 \geq 6$
   and $x_1, x_2 \geq 0$.

(12 Marks)

PART – B

5 a. Explain the role of duality theory in sensitivity analysis.   (05 Marks)
   b. Explain the procedure of dual Simplex method.   (05 Marks)
   c. Use dual Simplex method and solve the following LPP and also find the solution to the primal.
   Minimize $Z = 2x_1 + 9x_2 + x_3$
   Subject to $x_1 + 4x_2 + 2x_3 \geq 5$
   $3x_1 + x_2 + 2x_3 \geq 4$
   and $x_1, x_2, x_3 \geq 0$.

(10 Marks)

6 a. Find the initial basic feasible solution using North West corner rule and Vogel's approximation method for the following transportation problem :   (10 Marks)

19	30	50	10	7
70	30	40	60	9
40	8	70	20	18
5	8	7	14	

   b. Write the procedure of Hungarian method.   (05 Marks)
   c. Find the optimal solution to the following assignment problem showing the costs (Rs) for assigning workers to jobs.   (05 Marks)

		Job		
		I	II	III
	W_1	18	17	16
Workers	W_2	15	13	14
	W_3	19	20	21

7 a. Using the dominance concept, obtain the optimal strategies for both the players and determine the value of game. The pay off matrix for player A is given.   (10 Marks)

		B				
		I	II	III	IV	V
	I	2	4	3	8	4
A	II	5	6	3	7	8
	III	6	7	9	8	7
	IV	4	2	8	4	3

   b. Using Graphical method solve the following :   (10 Marks)

		B		
		I	II	III
A	I	1	3	11
	II	8	5	2

8 Explain briefly :
   a. Meta heuristics
   b. Decision trees
   c. Simulated annealing
   d Genetic algorithm.

(20 Marks)

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Sixth Semester B.E. Degree Examination, June/July 2017
Compiler Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

1 a. Explain the differential phases of a compiler by considering the following statement as input
   a = b + c * 60 **(10 Marks)**
   b. Explain the concept of input buffering in the lexical analysis phase of a compiler. **(06 Marks)**
   c. Construct transition diagram to recognize the tokens given below:
   (i) identifiers   (ii) Relational operators. **(04 Marks)**

2 a. Briefly explain the problems associated with top-down parser. **(12 Marks)**
   b. Explain the role of the parser in compiler model. **(04 Marks)**
   c. Explain error recovery strategies in parser. **(04 Marks)**

3 a. Given the grammar
   $E \rightarrow E + T / T$
   $T \rightarrow T * F / F$
   $F \rightarrow (E) / id$
   (i)   Make the 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. **(12 Marks)**
   b. What is Handle Pruning? Explain with an example. **(08 Marks)**

4 a. Construct SLR Parsing table for the following grammar :
   $X \rightarrow Xb$
   $X \rightarrow a$
   and show the moves made by the parser on the input string abb. **(12 Marks)**
   b. Construct LALR parsing table for the grammar,
   $S \rightarrow CC$
   $C \rightarrow aC / d$ **(08 Marks)**

PART – B

5 a. Briefly explain the concept of syntax directed definition with example. **(08 Marks)**
   b. Define inherited and synthesized attributes. **(04 Marks)**
   c. Give the syntax directed definition to process a variable declaration in C and construct
   dependency graph for input float x, y, z; **(08 Marks)**

6 a. Construct DAG for the expression,
   $((x + y) - ((x + y) * (x - y))) + ((x + y) * (x - y))$
   Give the sequence of steps for the same. **(08 Marks)**
   b. Explain with examples quadruples, triples and indirect triples. **(12 Marks)**

7 a. What is an activation record? Explain all the fields in an activation record. **(08 Marks)**
   b. Explain the following storage allocation strategies:
   (i)   Static allocation   (ii)   Heap allocation. **(12 Marks)**

8 a. Discuss the following terms:
   (i) Basic blocks.   (ii) Next-use information.   (iii) Flow graph. **(10 Marks)**
   b. Explain the following code optimization with example:
   (i) Finding local common sub expression.   (ii) Dead code elimination. **(10 Marks)**

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