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10AL61

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
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. Explain the different roles of manager. (09 Marks)
b. List out the levels of management. (03 Marks)
c. Explain Taylor's scientific management. Mention its limitations. (08 Marks)
- 2 a. What are the different steps involved in planning? (07 Marks)
b. What are signal use and standing plans? Explain. (08 Marks)
c. Differentiate between strategic and tactical planning. (05 Marks)
- 3 a. Explain in brief the principles of Organisation. (06 Marks)
b. Explain the various sources of recruitment. (08 Marks)
c. Discuss the steps in the selection procedure. (06 Marks)
- 4 a. Explain Maslow's theory of motivation. (06 Marks)
b. Explain the various barriers to communication. (06 Marks)
c. What are the different steps involved in controlling process? (08 Marks)

PART – B

- 5 a. Explain the stages of entrepreneurial process. (06 Marks)
b. Mention the barriers involved in entrepreneurship. (04 Marks)
c. Bring out the broad classification of entrepreneur. (10 Marks)
- 6 a. List out characteristics of SSI. (06 Marks)
b. Discuss the impact of Liberalisation , Privatisation , Globalisation on SSI. (08 Marks)
c. Define Ancillary and Tiny Industries. (06 Marks)
- 7 a. Briefly list out objectives of KSFC. (04 Marks)
b. Explain the following :
i) TECSOK ii) NSIC iii) KIADB iv) SIDBI. (16 Marks)
- 8 a. Write the various points to be considered for project identification. (05 Marks)
b. Describe the several stages followed in project formulation. (10 Marks)
c. Write the differences between PERT and CPM. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

USN

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10CS62

Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
UNIX System Programming

Time: 3 hrs.

Max. Marks:100

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

PART – A

1.
 - a. What is the need of ANSI standard for C language? Explain const and volatile data type qualifiers with example. (05 Marks)
 - b. Describe ANSI C defined set of CPP symbols. (05 Marks)
 - c. Write a C/C++ POSIX compliant program to check the following limits :
 - i) Max. number of child processes
 - ii) Max. number of opened files
 - iii) Number of clock ticks/second
 - iv) POSIX version value
 - v) Max. path name in bytes
 and prints a relevant error messages when there is a failure of APIs. (10 Marks)

2.
 - a. Define major device number and minor device number. Write the UNIX command with parameters to create the following :
 - i) Block device file/devt/bdsk with major and minor numbers of 287 and 101, respectively
 - ii) Symbolic link/usr/many/slink which references the file/usr/jose original. (04 Marks)
 - b. List any eight UNIX/POSIX file attributes and their meaning. Which of these attributes remains constant? List any two system calls and their respective commands that changes the attribute values and also mention which attributes get changed by these system calls. (10 Marks)
 - c. Explain file table and its entries during file manipulation. When rc = 2 in file table what is the meaning? (06 Marks)

3.
 - a. Write a C/C++ program to do the following operations using relevant headers and APIs.
 - i) To check named file exists or not
 - ii) If named file does not exist, create a file and copy the “hello, world”, to a file
 - iii) If named file does exist, program will simply read data from the file displays the contents of file on standard o/p device
 - iv) For same file print inode number and file size in bytes using stat system call. Use any regular file. (10 Marks)
 - b. Explainfcntl API when used for file locking. (10 Marks)

4.
 - a. Explain a memory layout of a C program. (08 Marks)
 - b. Explain with programming examples, setjmp and longjmp functions. (06 Marks)
 - c. Explain kernel support for a process show relevant data structures. (06 Marks)

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PART – B

- 5 a. What are swapper, init, and page daemon processes? List any four different process IDs. (04 Marks)
- b. With separate programming examples, explain fork and vfork functions. (10 Marks)
- c. Explain the sequence of processes involved in executing the TELNET server. (06 Marks)
- 6 a. Explain basic rules to coding a daemon, to prevent unwanted interactions from happening. (12 Marks)
- b. Explain kill() API with programming example. Also explain kill command with an example. (08 Marks)
- 7 a. Define FIFO. What is the difference between FIFO and pipe? What are the two uses of FIFO? Explain each one with examples. (12 Marks)
- b. Explain the following statement :
msgqid = msgget(15, IPC_CREAT/0644);
Also explain following functions.
i) msgctl ii) msgrcv. (08 Marks)
- 8 a. Write a C/C++ program to create and shared memory segment of 100,000 bytes, print first and last address of memory in which segment is attached and finally remove the shared memory segment from memory. Use relevant shared memory functions and headers. (08 Marks)
- b. Explain passing file descriptors over UNIX domain sockets with relevant structures and macros. (12 Marks)

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Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Compiler Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1**
- Explain language processing system, with diagram. (05 Marks)
 - Explain token, Lexeme and pattern with example. (05 Marks)
 - Give transition diagram for relational operator. (05 Marks)
 - Write regular expression for unsigned number. (05 Marks)
- 2**
- What is left recursion? Eliminate left recursion from the following grammar :
 $A \rightarrow AB \mid Aa \mid a$
 $B \rightarrow Be \mid b$ (05 Marks)
 - What is left factoring? What is its advantage? (05 Marks)
 - Explain the rules/steps to calculate FIRST and FOLLOW. (06 Marks)
 - Explain error recovery stages in syntax analysis. (04 Marks)
- 3**
- Construct the predictive parsing table for the grammar :
 $S \rightarrow A$
 $A \rightarrow aB \mid Ad$
 $B \rightarrow bBC \mid f$
 $C \rightarrow g$
 If necessary to calculate FOLLOW? (06 Marks)
 - Whether the given grammar is LL(1) or not? Construct predictive parsing table for same.
 $S \rightarrow AaAb \mid BbBa$
 $A \rightarrow \epsilon$
 $B \rightarrow \epsilon$
 Trace the grammar for string "ba". (10 Marks)
 - What is handle pruning? Explain. (04 Marks)
- 4**
- Give the grammar $A \rightarrow (A) \mid a$
 Find : i) LR(0) items
 ii) Construct SLR(1) parsing table
 iii) Show parsing steps for string ((a)). (08 Marks)
 - Show that, the following grammar is LR(1) but not LALR.
 $S \rightarrow Aa \mid bAC \mid BC \mid bBa$
 $A \rightarrow d$
 $B \rightarrow d$. (12 Marks)

PART – B

- 5 a. For the CFG given below, obtain SDD construct parse tree, syntax tree and annotated parse tree for input $5 * 6 + 7$.
- $S \rightarrow EN$
 $E \rightarrow E + T \mid E - T \mid T$
 $T \rightarrow T * F \mid T / F \mid F$
 $F \rightarrow (E) \mid \text{digit}$
 $N \rightarrow ;$
- (09 Marks)
- b. Construct DAG for $((a * b) + (c - d) * (a * b)) + b$. (06 Marks)
- c. Construct the translation scheme to enter type of each identifier using following grammar and apply it for string "id, id, id : real". (05 Marks)
- 6 a. What is quadruple? Triple and indirect triple? Translate the arithmetic expression : $a + - (b + c)$ into quadruple, triple and indirect triple. (06 Marks)
- b. Generate three address code for following code segment.
- ```

c = 0
do
{
 if (a < b)
 x++;
 else
 x--;
 c++
} while (c < 5)

```
- (04 Marks)
- c. What are the benefits of intermediate code generation? Write properties of intermediate languages. (06 Marks)
- d. What do you mean by short-circuit code? Explain with an example. (04 Marks)
- 7 a. What is activation record? Explain fields of general activation record. (08 Marks)
- b. Explain design goals of garbage collectors. (06 Marks)
- c. How reference counts of garbage collectors can be minimized? (06 Marks)
- 8 a. Explain issues of design of code generator. (10 Marks)
- b. Discuss the methods of optimization of basic blocks. (10 Marks)

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**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**

**Computer Network – II**

Time: 3 hrs.

Max. Marks:100

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

**PART – A**

- 1
  - a. What are the network services and internal network operation of packet switching network? Discuss in brief. (05 Marks)
  - b. Why message switching is not suitable for interactive application? Derive the expression for delay in datagram packet switching. (07 Marks)
  - c. Define routing. Explain the Bellman Ford algorithm with an example. (08 Marks)
- 2
  - a. Explain the FIFO and priority queue scheduling for managing traffic at packet level. (07 Marks)
  - b. Explain leaky bucket algorithm and Plot the bucket contents and non – confirming packets that arrival at leaky bucket policer at times,  $t = 1, 2, 3, 5, 6, 8, 11, 12, 13, 15$  and  $19$ . Assuming  $I = 4$  and  $L = 6$ . (07 Marks)
  - c. Distinguish between end-to-end versus hop-by-hop and implicit verses explicit feedback in closed loop for congestion control. (06 Marks)
- 3
  - a. What are the advantages of IPv6 over IPv4? Show IPv6 header format. (07 Marks)
  - b. What is fragmentation and reassembling in internet protocol? Suppose a router receives IP packet containing 600 data bytes and has to forward the packet to network with MTU 200 bytes. Assume that IP header is 20 bytes long. Show the fragments that the router creates and specify the relevant values in each fragment header (i.e. total length, fragment offset and more bit). (07 Marks)
  - c. Write a note on user datagram protocol. (06 Marks)
- 4
  - a. Explain how TCP establishes the connection using three-way handshake between two hosts. (06 Marks)
  - b. Differentiate between RIP and OSPF. (06 Marks)
  - c. Write short notes on : i) Mobile IP ii) DHCP. (08 Marks)

**PART – B**

- 5
  - a. What is DNS? Discuss the two method of DNS mapping. (06 Marks)
  - b. What is network management? Explain SNMP and its PDU. (08 Marks)
  - c. With neat block diagram, explain DES algorithm. (06 Marks)
- 6
  - a. What is VPN? Explain two methods of VPN access. (07 Marks)
  - b. What is MPLS network? Explain routing in MPLS domain. (07 Marks)
  - c. What is the need of overlay networks? (06 Marks)
- 7
  - a. List and explain the compression methods without loss. (08 Marks)
  - b. Write short notes on : i) VOIP ii) SIP iii) H-323. (12 Marks)
- 8
  - a. Explain the category of wireless routing protocol and discuss DSDV protocol. (07 Marks)
  - b. What are the security vulnerabilities of ad-hoc network? Discuss briefly the type of attacks. (07 Marks)
  - c. What is WSN? Explain a typical WSN node. (06 Marks)

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**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Computer Graphics and Visualizations**

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 the applications of computer graphics. (08 Marks)  
b. With a neat diagram, explain the working of CRT. (06 Marks)  
c. Describe the graphics geometric pipeline Architecture with a figure. (06 Marks)
- 2 a. List and explain different polygon types in OpenGL. (06 Marks)  
b. Explain stroke text and Raster text with suitable figures and mention how size of the text can be changed in each form of texts. (06 Marks)  
c. Explain Indexed color Model with suitable figure. (08 Marks)
- 3 a. Explain all three input modes with relevant figures. (09 Marks)  
b. Describe the importance of display lists. Explain the OpenGL functions used to define and execute a display list with a suitable example. (07 Marks)  
c. Discuss the functionality of Display Callback (`glutDisplayFunc( )`) and Idle Callback (`glutPostRedisplay( )`). (04 Marks)
- 4 a. List and explain different Frames in OpenGL. (06 Marks)  
b. Explain how to define Vertex Arrays and color Arrays to store vertex and color values. (07 Marks)  
c. Explain Affine transformations. (07 Marks)

**PART – B**

- 5 a. Describe Translation and scaling operations in homogeneous coordinate system with relevant Translation and scaling transformation matrices. (08 Marks)  
b. Write the OpenGL program modules to define a color cube and spin it around arbitrary axes using mouse buttons. (10 Marks)  
c. What are the advantages and Quaternion's? (02 Marks)
- 6 a. What is the use of `set_view_reference_point( )`, `set_view_plane_normal( )` and `glLookAt( )` functions in setting the camera view? (06 Marks)  
b. Describe two types of simple projection methods. (12 Marks)  
c. Explain `glOrtho( )` function with syntax. (02 Marks)
- 7 a. Explain 3 types of light-material interactions with figures. (06 Marks)  
b. Describe point sources and spotlight sources with figures. (06 Marks)  
c. Describe Phong Lighting Model. (08 Marks)
- 8 a. Explain Cohen – Sutherland's line clipping algorithm. (08 Marks)  
b. Describe Bresenham's line drawing algorithm. (08 Marks)  
c. What is Hidden surface Removal? Describe scanline algorithm. (04 Marks)

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**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Operation Research**

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 phases of operation search. (04 Marks)
- b. The postmaster of a local post office wishes to hire extra helpers during new year season to manage large increase in the volume of mail handling and delivery. Due to the limited office space and budget condition, the number of temporary helpers must not exceed 10. According to past experience men can handle 300 letters and 80 packages per day and women can handle 400 letters and 50 packages per day. The post master believes that the daily volume of extra mail and packages will not be more than 3400 and 680 respectively. A man receives Rs. 250/- a day and a woman receives Rs. 220/- a day. How many number of men and women helpers should be hired to keep the payroll at a minimum. (06 Marks)
- c. A toy company manufactures two types of dolls, a basic version doll 'A' and a deluxe version doll 'B'. Each doll of type B takes twice as long to produce as one of type A and the company would have time to make a maximum 2000 per day. The supply of plastic is sufficient to produce 1500 dolls per day (both A and B combined). The deluxe version requires a fancy dress of which there are only 600 per day available. If the company makes profit of Rs. 3.00 and Rs. 5.00 per doll respectively on doll A and B. How many of each should be produce per day in order to maximize profit. Solve by using graphical method. (10 Marks)
- 2 a. Solve the following LPP using Simplex method :  
Maximize  $Z = 4x_1 + 10x_2$   
Subject to  $2x_1 + x_2 \leq 50$   
 $2x_1 + 5x_2 \leq 100$   
 $2x_1 + 3x_2 \leq 90$   
and  $x_1, x_2 \geq 0$ . (10 Marks)
- b. Explain the following with example :  
i) Slack variables  
ii) Surplus variables  
iii) Basic solution  
iv) Optimal solution  
v) Unbounded solution. (10 Marks)
- 3 a. Solve the following LPP with Penalty method :  
Maximize  $Z = 5x_1 + 6x_2$   
Subject to  $2x_1 + 5x_2 \geq 1500$   
 $3x_1 + x_2 \geq 1200$   
 $x_1, x_2 \geq 0$ . (08 Marks)
- b. Using Two-phase method solve the following LPP :  
Minimize  $Z = x_1 + x_2$   
Subjected to  $2x_1 + x_2 \geq 4$   
 $x_1 + 7x_2 \geq 7$   
 $x_1, x_2 \geq 0$ . (12 Marks)



- 4 a. Use revised Simplex method to solve LPP :

$$\begin{aligned} \text{Maximize } Z &= 6x_1 - 2x_2 + 3x_3 \\ \text{Subjected to } 2x_1 - x_2 + 2x_3 &\leq 2 \\ x_1 + 4x_3 &\leq 4 \\ x_1, x_2, x_3 &\geq 0. \end{aligned}$$

(10 Marks)

- b. Write the dual of the following :

$$\begin{aligned} \text{Minimize } Z &= 3x_1 - 6x_2 + 4x_3 \\ \text{Subject to } 4x_1 + 3x_2 + 6x_3 &\geq 9 \\ x_1 + 2x_2 + 3x_3 &\geq 6 \\ 6x_1 - 2x_2 - 2x_3 &\leq 10 \\ x_1 - 2x_2 + 6x_3 &\geq 4 \\ 2x_1 + 5x_2 - 3x_3 &\geq 6 \\ \text{and } x_1, x_2, x_3 &\geq 0. \end{aligned}$$

(10 Marks)

## PART - B

- 5 a. Apply the principle of duality to solve the LPP :

$$\begin{aligned} \text{Maximize } Z &= 3x_1 + 2x_2 \\ \text{Subject to } x_1 + x_2 &\geq 1 \\ x_1 + x_2 &\geq 7 \\ x_1 + 2x_2 &\geq 10 \\ x_2 &\leq 3 \\ \text{and } x_1, x_2 &\geq 0. \end{aligned}$$

(10 Marks)

- b. Solve the following by using dual simplex method :

$$\begin{aligned} \text{Minimize } Z &= 2x_1 + x_2 + 3x_3 \\ \text{Subject to } x_1 - 2x_2 + x_3 &\geq 4 \\ 2x_1 + x_2 + x_3 &\leq 8 \\ x_1 - x_3 &\geq 0. \end{aligned}$$

and with all variables non-negative.

(10 Marks)

- 6 a. Write different steps in Hungarian algorithm to solve an assignment problem. (08 Marks)  
 b. A company is spending Rs. 1000 everyday on transportation of its units from three plants to four distribution centers. The supply and demand units with unit cost of transportation are given as :

| Plant          | Distribution centre |                |                |                | Capacity |
|----------------|---------------------|----------------|----------------|----------------|----------|
|                | D <sub>1</sub>      | D <sub>2</sub> | D <sub>3</sub> | D <sub>4</sub> |          |
| P <sub>1</sub> | 19                  | 30             | 50             | 12             | 7        |
| P <sub>2</sub> | 70                  | 30             | 40             | 60             | 10       |
| P <sub>3</sub> | 40                  | 10             | 60             | 20             | 18       |
| Demand         | 5                   | 8              | 7              | 15             |          |

What will be the maximum saving to the company by optimum scheduling?

(12 Marks)

- 7 a. Explain the following :
- Minimax and maximin principle
  - Pure and mixed strategy
  - Two persons zero sum game
  - Saddle point.
- (08 Marks)
- b. Using dominance concept, obtain the optimal strategies for both the players and determine the value of the game. The pay off matrix for player A is given (06 Marks)

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

- c. Solve the following game by graphical method :

|                |   | B <sub>1</sub> | B <sub>2</sub> | B <sub>3</sub> | B <sub>4</sub> |
|----------------|---|----------------|----------------|----------------|----------------|
|                |   | A <sub>1</sub> | 2              | 2              | 3              |
| A <sub>2</sub> | 4 | 3              | 2              | 6              |                |

(06 Marks)

- 8 Explain briefly :
- Table search algorithm
  - Genetic algorithm
  - Metaheuristics
  - Simulated annealing algorithm.

(20 Marks)

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