

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

10AL61

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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 functions of management. (10 Marks)
b. Explain in brief the various roles of a manager as suggested by Mintzberg. (06 Marks)
c. List the important features and limitations of Bureaucratic administration. (04 Marks)
- 2 a. What is Planning? List and explain the steps involved in planning. (10 Marks)
b. List the differences between strategic and tactical planning. (05 Marks)
c. Define Objectives. Discuss the characteristics of business objectives. (05 Marks)
- 3 a. List and explain the principles of an organisation. (10 Marks)
b. Explain the terms : Centralization and Decentralization. Explain the advantages of Decentralization. (06 Marks)
c. What is Staffing? Explain its importance. (04 Marks)
- 4 a. Define Motivation. Explain the nature of motivation. (08 Marks)
b. What is Communication? Describe the importance and purposes of communication. (08 Marks)
c. Briefly explain Robert House's model of leadership behavior. (04 Marks)

PART - B

- 5 a. Briefly explain the characteristics of a successful entrepreneur. (08 Marks)
b. Explain the stages of entrepreneurial development process. (08 Marks)
c. List the barriers to entrepreneurship and explain any one of them. (04 Marks)
- 6 a. Define Small scale industry. Explain the role of SSIs in the economic development. (08 Marks)
b. Explain briefly the steps involved in starting SSI. (08 Marks)
c. List any five problems faced by small – scale industries and explain any one of them. (04 Marks)
- 7 a. List some central level institutions supporting small scale industries and explain any one of them as to how they assist the SSIs. (08 Marks)
b. What is SIDBI? Discuss the various types of assistances SIDBI provides to small enterprises. (08 Marks)
c. Briefly explain about KIADB. (04 Marks)
- 8 a. Define the Project. Discuss the need and significance of a project report. (08 Marks)
b. Briefly discuss Network Analysis. What is PERT? Explain. (08 Marks)
c. List the steps followed in project appraisal and explain the economic aspects of a project. (04 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.

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
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. ANSI C supports function pointer to be used without dereferencing? Justify. (04 Marks)
- b. Discuss how to ensure a user program conforming to POSIX standard. Also write the structure of a POSIX program. (06 Marks)
- c. Write POSIX compliant C++ program to check the following runtime limits :
 - i) Max number of open files ii) max number of links iii) Max number of real time signals
 - iv) Max number of characters in the filename. (05 Marks)
- d. What is an API? Explain the differences between API and library function. (05 Marks)
- 2 a. What are the file attributes? Some attributes are constant list them, also some are modifiable mention the commands and APIs used for the same. (08 Marks)
- b. Discuss the differences between ln, ln -s and CP commands with suitable examples. (06 Marks)
- c. Explain the differences between file stream pointer and file descriptor. (06 Marks)
- 3 a. Write a note on the following APIs : i) access ii) stat/fstat. (10 Marks)
- b. Write C++ program to emulate UNIX CP command to copy the contents of an existing file ab.txt to the file b.txt. (04 Marks)
- c. What are locks? How to set/get advisory locks in UNIX? Explain the API used for the same. (06 Marks)
- 4 a. What is an exit handler? How to set the exit handlers? Explain with an example. (06 Marks)
- b. What is an Env list? Explain the APIs used for modifying the environment list. (08 Marks)
- c. Discuss non-local goto statements in ANSIC with suitable example. (06 Marks)

PART – B

- 5 a. Explain the differences between fork() and exec() APIs. (06 Marks)
- b. What is race condition? Write a program to avoid race condition, by allowing parent to execute first, also mention the different ways to avoid race condition. (08 Marks)
- c. Write a note on process groups and session. (06 Marks)
- 6 a. What is signal mask? Explain also write a program using C++ to mask the signal SIGINT. (08 Marks)
- b. What is a Interval timer? Explain briefly the different ways of setting the interval timers. (06 Marks)
- c. With neat diagram explain the error logging facility. (06 Marks)
- 7 a. With suitable example explain popen() and pclose() functions. (08 Marks)
- b. What is message queue? Explain the different APIs used for handling message queues. (09 Marks)
- c. Explain the limitations of pipe. (03 Marks)
- 8 a. Explain the different APIs used for handling shared memory. (10 Marks)
- b. Write a note on client-server connection functions. (06 Marks)
- c. Explain stream pipes with suitable diagram. (04 Marks)

* * * * *

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Compiler Design

Time: 3 hrs.

Max. Marks:100

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

PART – A

- 1 a. Discuss the various phases of a compiler, show the translation for an assignment statement position = initial + rate * 60 clearly indicate the output of each phase. (12 Marks)
- b. Write regular definition for an unsigned number, also draw transition diagrams for the same. (06 Marks)
- c. Write a brief note on science involved in building a compiler. (02 Marks)
- 2 a. Define the terms: i) Left recursion; ii) Left factorization, and refine the following grammer.
 - i) $S \rightarrow Aa|b$
 $A \rightarrow Ac|Sd|\epsilon$
 - ii) $st \rightarrow \text{identifier} := \text{exp}|\text{identifier} (\text{exp} - \text{list})| \text{other}$. (06 Marks)
- b. Given the grammer

$$S \rightarrow a \uparrow (M)$$

$$M \rightarrow M, S|S$$
 - i) Make necessary changes, suitable for LL(1) parsing (02 Marks)
 - ii) Construct predictive parsing table (08 Marks)
 - iii) Show the parser moves on the input (a, (a, a)). (04 Marks)
- 3 a. What is shift reduce parsing, list the actions of S|R parser for the grammer given below, $S \rightarrow (S)S|\epsilon$ and the input is () \$. What are the 2 conflicts that may occur during shift reduce parsing? (08 Marks)
- b. Obtain a set of canonical LR(0) items for the grammer and construct LR(1) parsing table. Is the grammer SLR(1). Give reasons.
 Grammer is $S \rightarrow L = R$
 $S \rightarrow R$
 $L \rightarrow * R$
 $L \rightarrow \text{id}$
 $R \rightarrow L$ (12 Marks)
- 4 Consider the following grammer

$$S \rightarrow AA$$

$$A \rightarrow aA|b$$
 - a. Determine if the grammer is LR(1) or not. (10 Marks)
 - b. Determine if the grammer is LALR or not. (10 Marks)

PART – B

- 5 a. Give the syntax directed definition to process a simple variable declaration in 'C'. (06 Marks)
 b. Define dependency graph and construct dependency graph for the input float id1, id2, id3. (08 Marks)
 c. Define inherited and synthesized attributes, give examples for each. (06 Marks)
- 6 a. Write syntax directed definition for flow of control statements
 i) $S \rightarrow \text{if}(B) S1$
 ii) $S \rightarrow \text{while}(B) S1$ (06 Marks)
 b. Explain the following with an example:
 i) Quadruples
 ii) Triples
 iii) Indirect triples. (09 Marks)
 c. Translate the given, assignment statement into three-address-code,
 $n = f(a[i]);$ (05 Marks)
- 7 a. What is an activation record? Explain the purpose of each item in the activation record with example. (10 Marks)
 b. Explain desirable properties of memory manager. (05 Marks)
 c. Explain briefly the performance metrics to be considered while designing a garbage collector. (05 Marks)
- 8 a. Discuss the various issues in the design of a code generator. (10 Marks)
 b. Write the three-address code and construct the basic blocks, for the following program segment:
 $\text{Sum} = 0;$
 $\text{for}(i = 0; i \leq 10; i++)$
 $\text{sum} = \text{sum} + aLi;$ (10 Marks)

* * * * *

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

10CS/IS64

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Computer Network - 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. List atleast five differences between datagram and virtual circuit switching. (05 Marks)
- b. Explain a switch with multistage architecture to transport bits from input to output port. (05 Marks)
- c. Explain Bellman ford algorithm used for routing considering the network topology given in Fig Q1(c)

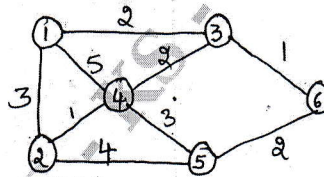


Fig Q1(c)

(10 Marks)

- 2 a. Explain weighted fair Queuing used for providing QOS in Internet. (05 Marks)
- b. Describe buffer management technique based on random early detection. (05 Marks)
- c. What is traffic policing? Explain leaky bucket algorithm used for traffic policing. (10 Marks)
- 3 a. List atleast ten fields of IP V4 header, and explain fields that are updated at every hop. (08 Marks)
- b. Explain address resolution protocol and reverse address resolution protocol functions. (04 Marks)
- c. Explain tunneling based solution for migration from IPV4 to IPV6. (04 Marks)
- d. List and explain fields of UDP datagram and mention two application protocols that use UDP as a transport protocol. (04 Marks)
- 4 a. Describe connection establishment in TCP using three way handshakes. (05 Marks)
- b. Describe TCP congestion control used for controlling congestion window. (05 Marks)
- c. Explain mobile IP based routing and its optimization for routing in mobile networks. (10 Marks)

PART - B

- 5 a. Describe hierarchy of domain name space in DNS. (05 Marks)
- b. Describe network management tasks required to manage and control a communication network. (05 Marks)
- c. Classify Internet Infrastructure attacks into four categories and explain them briefly. (10 Marks)

- 6 a. Give an overview of QOS methods in integrated services. (05 Marks)
b. Give an overview of diffserv operation to offer QOS in Internet. (05 Marks)
c. Explain extranet VPN, internet VPN, and remote access VPN using a suitable diagram. (06 Marks)
d. Describe label switching paradigm in MPLS networks with an example considering ingress LSR, Core LSR, and Egress LSR. (04 Marks)
- 7 a. A JPEG based computer screen consist of 1024×1280 pixels. Each pixel is represented by 24 bits. Find out bandwidth required for the image, if a video consists of 30 images/second. (04 Marks)
b. Design a Huffman encoder for a source generating $\{a_1, a_2, a_3, a_4, a_5\}$ and with probabilities $\{0.05, 0.05, 0.08, 0.30, 0.52\}$. (08 Marks)
c. List contents of RTP packet header and explain them in brief. (08 Marks)
- 8 a. Explain dynamic source routing protocol used for routing in mobile adhoc networks. (08 Marks)
b. Describe structure of sensor node used in wireless sensor network. (06 Marks)
c. Classify clustering protocols in wireless sensor network and explain LEACH routing protocol. (06 Marks)

USN

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

10CS65

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020

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. With a neat block diagram, explain the graphics pipeline architecture. (10 Marks)
b. Explain the concept of pinhole camera. Derive the expression for angle of view and also indicate the advantages and disadvantages. (10 Marks)
- 2 a. Write an OpenGL recursive program for 2D Sierpinski Gasket using Midpoint Method. (10 Marks)
b. Explain the major groups of graphics function with at least two OpenGL functions for each. (10 Marks)
- 3 a. Explain the various classes of logical input devices that are supported by OpenGL. Explain the functionality of each. (10 Marks)
b. What is meant by measure and trigger of a device? Explain with neat diagram the various models. (10 Marks)
- 4 a. Explain the OpenGL frames. (06 Marks)
b. Explain rotation and translation transformation with respect to 2-dimensions. (08 Marks)
c. Explain the complete procedure of converting world object frame into camera frame using model-view matrix. (06 Marks)

PART – B

- 5 a. Write an OpenGL program that allow you to rotate CUBE along x, y, z axis using button. (10 Marks)
b. Explain the basic transformations in 3D and represent them in matrix form. (10 Marks)
- 6 a. Bring out the deference between perspective and parallel projections. (08 Marks)
b. Define projection. Explain the functions used for the purpose in OpenGL:
i) Orthographic projections
ii) Perspective projections (12 Marks)
- 7 a. Describe the Phong lighting model and also indicate the advantages and disadvantages. (10 Marks)
b. Explain the different methods of shading a polygon. Discuss any two. (10 Marks)
- 8 a. Write Cohen-Sutherland line clipping algorithm. (10 Marks)
b. Write Bresenham's line drawing algorithm. (10 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.

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Operations Research

Time: 3 hrs.

Max. Marks:100

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

PART - A

- 1 a. Explain the phases of OR. (06 Marks)
 b. A manufacturer produces three models of a certain product. He uses two types of raw materials of which 4000 and 6000 units respectively are available. The raw material requirements per unit of the three models are given below:

| Raw Material | Requirements per unit of given model | | |
|--------------|--------------------------------------|----|-----|
| | I | II | III |
| A | 2 | 3 | 5 |
| B | 4 | 2 | 7 |

The labour time for each unit of model I is twice that of model II and three times of model III. The entire labour force of the factory can produce the equivalent of 2500 units of model I. A market survey indicates that the minimum demand of three models are 500, 500 and 375 units respectively. However, the ratios of the numbers of units produced must be 3:2:5. Assume that the profit per unit of models I, II and III are Rs.60, 40 and 100 respectively. Formulate the problem as a linear programming model in order to determine the number of units of each profit which will maximize profit. (10 Marks)

- c. What is the impact of OR on numerous organizations? (04 Marks)

- 2 a. Solve the following LP problem graphically:

$$\text{Maximize } Z = x_1 + \frac{x_2}{2}$$

$$\text{Subject to } 3x_1 + 2x_2 \leq 12$$

$$5x_1 \leq 10$$

$$x_1 + x_2 \leq 18$$

$$-x_1 + x_2 \geq 4 \quad \text{and} \quad x_1 \geq 0, x_2 \geq 0$$

(10 Marks)

- b. Solve the following LPP by simplex method:

$$\text{Maximize } Z = 2x_1 + 4x_2 + 3x_3$$

$$\text{Subject to } 3x_1 + 4x_2 + 2x_3 \leq 60$$

$$2x_1 + x_2 + 2x_3 \leq 40$$

$$x_1 + 3x_2 + 2x_3 \leq 80 \quad \text{and} \quad x_1 \geq 0, x_2 \geq 0, x_3 \geq 0$$

(10 Marks)

- 3 a. Solve the following LPP by Big M method:

$$\text{Maximize } Z = 3x_1 - x_2$$

$$\text{Subject to the constraints } 2x_1 + x_2 \geq 2$$

$$x_1 + 3x_2 \leq 3$$

$$x_2 \leq 4 \quad \text{and} \quad x_1, x_2 \geq 0$$

(10 Marks)

- b. Solve the following using Two phase method:

$$\text{Minimize } Z = 0.4x_1 + 0.5x_2$$

$$\text{Subject to } 0.3x_1 + 0.1x_2 \leq 2.7$$

$$0.5x_1 + 0.5x_2 = 6$$

$$0.6x_1 + 0.4x_2 \geq 6 \quad \text{and } x_1, x_2 \geq 0$$

(10 Marks)

- 4 a. Explain the procedure of computing for a basic feasible solution in revised simplex method.

(07 Marks)

- b. Convert the following problems in to its dual:

i) Minimize $Z = 2x_1 + 2x_2 + 4x_3$

$$\text{Subject to } 2x_1 + 3x_2 + 5x_3 \geq 2$$

$$3x_1 + x_2 + 7x_3 \leq 3$$

$$x_1 + 4x_2 + 6x_3 \leq 5 \quad \text{and } x_1, x_2, x_3 \geq 0$$

ii) Minimize $Z = [3, 5] \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

Subject to

$$\begin{bmatrix} 1 & 0 \\ 0 & 2 \\ 3 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} \leq \begin{bmatrix} 4 \\ 12 \\ 18 \end{bmatrix} \quad \text{and} \quad \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} \geq \begin{bmatrix} 0 \\ 0 \end{bmatrix}$$

(06 Marks)

- c. Explain:

i) Weak duality property

ii) Strong duality property

iii) Complementary solution property with example.

(07 Marks)

PART - B

- 5 a. In parametric linear programming explain

i) Systematic changes in the c_j parameters

ii) Systematic changes in the b_j parameters.

(06 Marks)

- b. Write the dual of the following LP problem and solve it

$$\text{Maximize } Z = 4x_1 + 2x_2$$

$$\text{Subject to } -x_1 - x_2 \leq -3$$

$$-x_1 + x_2 \leq -2 \quad \text{and } x_1, x_2 \geq 0$$

Hence or otherwise write down the solution of primal.

(10 Marks)

- c. Write in brief about economic interpretation of duality.

(04 Marks)

- 6 a. Find the initial basic feasible solution to the following transportation problem, using Vogel's approximation method.

| Sources | Destinations | | | | Supply |
|----------------|----------------|----------------|----------------|----------------|--------|
| | D ₁ | D ₂ | D ₃ | D ₄ | |
| S ₁ | 13 | 15 | 19 | 17 | 250 |
| S ₂ | 17 | 19 | 16 | 15 | 200 |
| S ₃ | 15 | 17 | 17 | 15 | 250 |
| Demand | 100 | 150 | 250 | 100 | |

(08 Marks)

- b. Find the optimal solution to the given transportation problem. Use North-West corner rule to find the initial basic feasible solution. (12 Marks)

| | | | | |
|---------|--------------|---|---|---|
| | Destinations | | | |
| | 6 | 3 | 5 | 4 |
| Sources | 4 | 8 | 7 | 3 |
| | 3 | 4 | 3 | 2 |
| | 4 | 2 | 3 | |
| | | | | |

- 7 a. Two competitors A and B are competing for the same product. Their different strategies are given in the following pay off matrix:

| | | | | | |
|-----------|-----|-----------|----|-----|----|
| | | Company B | | | |
| | | I | II | III | IV |
| Company A | I | 3 | 2 | 4 | 0 |
| | II | 3 | 4 | 2 | 4 |
| | III | 4 | 2 | 4 | 0 |
| | IV | 0 | 4 | 0 | 8 |

Use dominance principle to find optimal strategies.

(10 Marks)

- b. Solve the following 2×4 game graphically:

| | | | | | |
|---|----|---|----|-----|----|
| | | B | | | |
| | | I | II | III | IV |
| A | I | 2 | 2 | 3 | -1 |
| | II | 4 | 3 | 2 | 6 |

(10 Marks)

- 8 Write a note on:

- Tabu search
- Genetic algorithms
- Algebra of simplex method
- Post optimality analysis.

(20 Marks)
