

KU COLLEGE OF ENGINEERING & TECHNOLOGY
KAKATIYA UNIVERSITY CAMPUS, WARANGAL – 506 009 (TS)

B.TECH (CSE & IT) II/IV Year—II SEMESTER – I SESSIONAL EXAMINATION
(OOP Through JAVA)

Date: 08-04-2025

Max Marks: 20

Answer all questions

6*1=6m

1. a) Why is Java Byte Code?
- b) What do you understand by an instance variable and a local variable?
- c) What are the various access modifiers in Java?
- e) What is the output of the following Java program?

```
class Test
{
    public static void main (String args[])
    {
        System.out.println(10 + 20 + "CSE and IT");
        System.out.println("CSE and IT " + 10 + 20);
    }
}
```

- f) What is this keyword in java?
- g) What is polymorphism?

Answer any two questions

2*7=14m

2. a) Explain Object Oriented Programming Concepts in Detail?
- b) Write the syntaxes of while and for loops in java? Write a java program to find factorial of a given number using recursion?
- c) What is an array? How arrays are declared and initialized? Explain with examples?

(OR)

3. a) What are features of Java?
- b) Explain the different parameter passing mechanisms used in java with an example?
- c) What is Constructor? Explain Constructor overloading with suitable example?
4. a) Explain about varargs with examples?
- b) Explain about static variables, methods and blocks with suitable examples?
- c) Explain about String and its methods with suitable examples?

(OR)

5. a) Explain about StringBuffer and its methods with suitable examples?
- b) What is inheritance? Explain different types of inheritance with suitable example?
- c) What is Abstract Class? Demonstrate with suitable example?

Prepared by V Ramana Babu

68

DEPARTMENT COMPUTER SCIENCE AND ENGINEERING
KU COLLEGE OF ENGINEERING AND TECHNOLOGY
IV-Semester B.Tech (CSE) Internal Examination
DESIGN AND ANALYSIS OF ALGORITHMS

103

Time: 1:30 Hours

Max. Marks: 30

5X6=30

1. Write algorithm for addition two matrices and find its time complexity?(2M)
2. Write control abstraction of Divide and Conquer?(2M)
3. Write a recursive algorithm for finding sum n numbers.(2M)

(ANSWER ANY FOUR QUESTIONS)

1. Write recursive algorithm for binary search and find its time complexity?(6M)
2. Write algorithm for multiplying two matrices and find its time complexity?
3. Write a non-recursive algorithm for Merge sort.(6M)
4. Write Kruskal's algorithm for finding minimum cost spanning tree.(6M)
5. Write control abstraction for Greedy approach. Consider the following instance of the knapsack problem
 - a. $N=3, m=25, (p_1, p_2, p_3)=(25, 24, 15)$, and $(w_1, w_2, w_3)=(18, 15, 10)$ and find the solution.(6M)

KU COLLEGE OF ENGINEERING & TECHNOLOGY
KAKATIYA UNIVERSITY CAMPUS, WARANGAL-506 009 (T.S), INDIA

B. TECH (IT) II YEAR II SEMESTER I SESSIONAL EXAM
OPERATING SYSTEM

Note: Answer all the Questions

MARKS: 5x1= 05

1. What are the services and functions of operating system?
2. What is system call? List its types.
3. Explain the concept of context switch?
4. What is raising condition? Give syntax structure of critical section problem?
5. What is deadlock? Explain its characteristics?

Note: Answer any four Questions

MARKS: 4x5= 20

6. Write a short note on different computing environments? *Comp*
7. Explain the design and implementation of operating system? *inner of*
8. What is CPU scheduling? Explain any three algorithms with an example? *comp*
9. Explain classical problems of synchronization?
10. With an example, explain the banker's algorithm?
11. Explain the inter-process communication?

140

Strictly do not write anything on this question paper except your H.T. Number

H.T. Number

KU COLLEGE OF ENGINEERING & TECHNOLOGY

KAKATIYA UNIVERSITY CAMPUS, WARANGAL - 506 009 (TS)

B.TECH II/IV - II-SEM: I-SESSIONAL EXAMINATION

Mathematical Foundations in computer science

(CSE & IT Branch)

Date: 03-04-2025

Time: 10.30 A.M to 12.00 NOON

Max Marks: 20.

SECTION A

Answer all the following questions

1 Define Lattice and Boolean algebra. 1M

2 Define transitive closure of a relation. Give an example. 1M

3 Let $X = \{2, 3, 6, 12, 24, 36\}$ and the relation $\leq$ be such that $x \leq y$ if x divides y . Draw the 1M

Hesse diagram of $\langle X, \leq \rangle$.

4 Construct truth table for $[(p \vee q) \wedge (\sim r)] \leftrightarrow q$. 1M

5 Express $\left(\frac{1}{4+x}\right)^3$ as a formal power series. 1M

6 Find the generating function for the number of ways the sum is calculated when two dies are 1M
thrown such that first die shows even face and second shows odd face.

SECTION B

Answer any two of the following questions

7 (a) Define complement of an element. Also show that in a Boolean algebra for all $a \in B$ there 7M
exists a unique complement $\bar{a}$ in B .

OR

(b) Define disjoint collection of sets. For any two sets A and B show that 7M
 $A \cup B = (A \cap \sim B) \cup (B \cap \sim A) \cup (A \cap B)$

8 (a) Find the inverse formal power series of $A(x) = 1 - 5x + 3x^2 - 7x^3$. 7M

OR

(b) Solve the recurrence relation $a_n + 6a_{n-1} + 12a_{n-2} + 8a_{n-3} = 3^n$ for $n \geq 3$ 7M

Paper set by Dr. K. Vijay Kumar

Strictly do not write anything on this question paper except your H.T. Number

KU COLLEGE OF ENGINEERING & TECHNOLOGY

KAKATIYA UNIVERSITY CAMPUS, WARANGAL - 506 009 (T.S.)

B.TECH-IVth SEM- CSE-& IT: I - SESSIONAL EXAMINATION

DIGITAL ELECTRONICS

Date: 02-04-2025

Time: 10:30 am to 12:00 pm

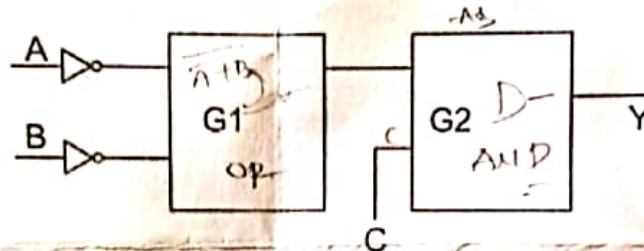
Max Marks: 20

Note: 1. Answer *All* questions from PART-A.

2. Answer Any *TWO* questions from PART-B.

PART-A (6×1=6)

- What will be the decimal equivalent of the unsigned binary number $0110\ 1001$? (1)
- In 2's complement representation, how to represent -5 with 4-bits and 6 bits? (1)
- If the 'X' and 'Y' logic inputs are available and their complements $\bar{X}$ and $\bar{Y}$ are not available. Then find the minimum number of two-input NAND required to implement $X \odot Y$ and also draw its logic diagram. (1)
- In the figure shown, the output is required to be $Y=ABC$. Find the gates G_1 and G_2 . (1)



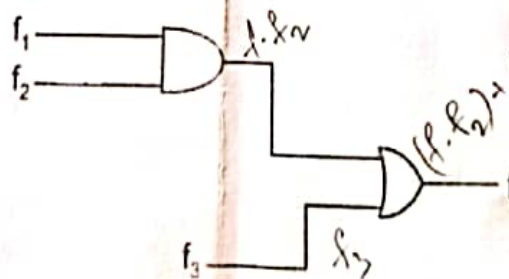
- Consider the logic circuit shown in figure, the function f_1, f_2 and f (in canonical sum of products form in decimal notation) are

$$f_1(w,x,y,z) = \sum m\{8,9,10\}$$

$$f_2(w,x,y,z) = \sum m\{7,8,12,13,14,15\}$$

$$f(w,x,y,z) = \sum m\{8,9\}$$

Determine the function f_3 .



- Convert $(A98B)_{16}$ into $(X)_7$

PART-B (2×7=14)

- Implement the following Boolean function with NAND gates

$$f(x,y,z) = \sum m(1,2,3,4,5,7)$$

[P. T. O.]

Perform 305.5-168.8 Decimal subtraction in BCD by 9's complement method. ✓

(2)

Simplify the following expression using Karnaugh map method and implement it in universal logic. ✓

(3)

$$f = \prod M(6,7,8,9).d(10,11,12,13,14,15)$$

Simplify the Boolean function using Karnaugh map method:

$$f(A,B,C,D,E) = \sum m(6,9,13,18,19,25,27,29,31) + d(2,3,11,15,17,24,28) \times$$

(2)

Design a full adder and draw its logic diagram with NOR logic. ✓

(2)

Realize all 2- input logic gates using NOR gates. ✓

(3)

Perform 27.125- 79.625 using 12-bit 2's complement arithmetic. ✗

(2)

Determine the Hamming code for the information code 10101 for odd Parity. ✓

(2)

Minimize the function below using the tabular method of simplification: (3)

$$Z = f(A,B,C,D) = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + A\bar{B}CD + A\bar{B}C\bar{D} + \bar{A}BCD + \bar{A}BC\bar{D} + \bar{A}\bar{E}CD$$

Paper set by Dr. V. Mahender

KU COLLEGE OF ENGINEERING & TECHNOLOGY
B.TECH-IVth SEM- CSE-& IT: II – SESSIONAL EXAMINATION
DIGITAL ELECTRONICS

Date: 23-06-2025

Time: 02:30 P.M to 04.00 P.M

Max Marks: 20

Note: 1. Answer *All* questions from PART-A.

2. Answer Any *TWO* questions from PART-B.

PART-A($3 \times 2 = 6$)

1. a) Realize a full-subtractor by using decoder (2)
- b) Write the truth table for T-FF (2)
- c) Design a CMOS logic circuit to implement $F(A,B,C) = ABC$ (2)

PART-B($2 \times 7 = 14$)

2. a) Implement a 16:1 multiplexer from 8:1 multiplexer with given Boolean function
 $F = \sum m\{0,1,2,3,4,10,14,15\}$
b) Design a 2-bit magnitude comparator. (4+3)
3. a) What is the Race-around condition and how it can be eliminated by using Master-Slave configuration?
b) Design a synchronous 3-bit UP counter by using JK-FF. (4+3)
4. a) Draw and explain the TTL NAND gate with Totem-pole output.
b) Draw and explain 3-input DTL NAND gate (4+3)

Paper set by Dr. V. Mahender



KU COLLEGE OF ENGINEERING & TECHNOLOGY
B.TECH (CSE & IT) II/IV Year—II SEMESTER – II SESSIONAL EXAMINATION
(OOP Through JAVA)

Date: 27-06-2025

Max Marks: 20

Answer all questions

06*01=06

5. a) What is the first keyword used in a java application development?
- b) What is Marker Interface in Java?
- c) Differentiate between Checked and Unchecked Exception in Java?
- d) What are Inner classes?
- e) How can you pass parameters to Applets?
- f) What is the default layout of Frame?

Answer any two questions

02*07=14

6. a) What is a package? Explain how to create and access a java package with an example?
- b) Explain try, catch, throw and finally blocks with example program?
7. a) Discuss the concept of user defined exceptions in java with suitable program?
- b) Write a Java program for Reading and writing files using byte streams?
8. a) What is Applet? Explain life cycle of Applet with example?
- b) Create frame which include labels, text fields and button?
- c) Describe the different types of layout managers in java?

Prepared by V Ramana Babu



K.U. COLLEGE OF ENGINEERING AND TECHNOLOGY::WARANGAL
B.Tech. (CE) II YEAR II SEMESTER II MID EXAMINATIONS
Subject :Constitution of India(COI)

Branches;MECH,EEE,CSE,IT,CSD.

Time: 90 Min

Date: 28.06.2025

Max.Marks:20

PART A

Note: Answer all the Questions

6x1=6

1. Preamble
2. Drafting Committee
3. Indian National Congress
4. Indian Government Act 1935
5. Independent Judiciary
6. Single Citizenship

PART B

Note: Answer any Two Questions of the following

2x7=14

1. State the salient features of the Indian Constitution
2. Historical Perspectives of Indian Constitution
3. Explain the Parliamentary form of Government

Paper Set by: Mr. Kallepally Prashanth

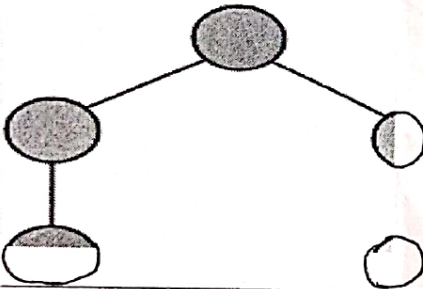
68

FACULTY OF ENGINEERING & TECHNOLOGY
KAKATIYA UNIVERSITY, WARANGAL-506 009
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

B. Tech. (CSE) IV SEMESTER

Design and Analysis of Algorithms

Time: 90 Min.

	ANSWER ALL OF THE FOLLOWING (3X 2 = 6 Marks)	Marks																
1.	a. What is an optimal BST? b. Define principle of optimality. c. Give the chromatic number for the following graph. 	2 2 2																
	ANSWER ANY FOUR OF THE FOLLOWING (4X 6 = 24 Marks)																	
2.	Solve the 0/1 knapsack problem using dynamic programming approach for $n=3$, $m=6$, $(p_1, p_2, p_3)=(1, 2, 5)$, $(w_1, w_2, w_3)=(2, 3, 4)$.	6																
3.	Use function OBST to compute $w(i, j)$, $r(i, j)$ and $c(i, j)$, $0 \leq i \leq j \leq 4$, for the identifier set $(a_1, a_2, a_3, a_4)=(\text{do}, \text{if}, \text{int}, \text{while})$ with $p(1:4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$. Using the $r(i, j)$'s, construct the optimal binary search tree.	6																
4.	Design a three stage system with device type D1, D2, D3. The costs are ₹30, ₹15 and ₹20 respectively. The costs of the system are to be more than ₹105. The reliability of each device to be 0.9, 0.8 and 0.5 respectively.	6																
5.	Solve the following instance of the TSP using LCBB. <table><tr><td>∞</td><td>20</td><td>30</td><td>10</td></tr><tr><td>15</td><td>∞</td><td>16</td><td>4</td></tr><tr><td>3</td><td>5</td><td>∞</td><td>2</td></tr><tr><td>19</td><td>6</td><td>18</td><td>∞</td></tr></table>	∞	20	30	10	15	∞	16	4	3	5	∞	2	19	6	18	∞	6
∞	20	30	10															
15	∞	16	4															
3	5	∞	2															
19	6	18	∞															
6.	Draw the portion of the state space tree generated by LCBB for knapsack instance $n = 4$, $m = 15$, $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$ and $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$.	6																

KU COLLEGE OF ENGINEERING & TECHNOLOGY

B.TECH CSE(II/IV Year) – II SESSIONAL EXAMINATION

(OPERATING SYSTEMS)

Date: 25-06-2025

Time 02:30 PM to 04:00 PM

Max Marks: 25

PART-A

Answer all questions

(5x1=5)

- a What is a Demand Paging
- b Define starvation in deadlocks.
- c What is page fault & what is the purpose of the page table?
- d What is file system mounting?
- e What is thrashing and how it can be controlled?

PART-B

Answer any two Questions

(2X10=20)

1.
 - a Explain the Banker's Algorithm for deadlock avoidance with an example.
 - b Describe paging and segmentation with neat diagrams.
2.
 - a Explain FIFO, LRU, and Optimal Page Replacement algorithms with examples.
 - b Discuss disk scheduling algorithms: FCFS, SSTF, and SCAN with an example.
3.
 - a. Explain the structure and implementation of a file system.
List and explain file allocation methods (any two).
 - b. Explain the access matrix and its implementation techniques.

Paper Set by M Rekhasree



137
Strictly do not write anything on this question paper except your H.T.Number

KU COLLEGE OF ENGINEERING & TECHNOLOGY
KAKATIYA UNIVERSITY CAMPUS, WARANGAL – 506 009 (TS)

B.TECH II/IV – II-SEM: II- SESSIONAL EXAMINATION
Mathematical Foundations in computer science

Date: 24-06-2025

(CSE & IT Branch)

Time: 2:30 P.M to 4:00 P.M

Max Marks: 20.

SECTION A

Answer all the following questions

- | | | |
|---|--|----|
| 1 | Write absorption law and Idempotent law in mathematical logic | 1M |
| 2 | For any two statements define Min terms and Max terms. | 1M |
| 3 | Show that $(p \rightarrow q) \rightarrow q \equiv p \vee q$ without constructing the truth table | 1M |
| 4 | Define a loop in a graph and multi graph also give examples. | 1M |
| 5 | Define Complete graph K_n and Bipartite graph. | 1M |
| 6 | Define Degree of a vertex and Isomorphism of graphs. | 1M |

SECTION B

Answer any two of the following questions

- | | | |
|---|---|----|
| 7 | (a) Write the Principal disjunctive normal form of $p \rightarrow [(p \rightarrow q) \wedge \sim(\sim q \vee \sim p)]$ | 7M |
| | OR | |
| | (b) Show that $R \wedge (P \vee Q)$ is a valid conclusion from the premises $P \vee Q, Q \rightarrow R, P \rightarrow M$ and $\sim M$. | 7M |
| 8 | (a) A simple non directed graph G is a tree iff G is connected and contains no cycles. | 7M |
| | OR | |
| | (b) State and prove Euler's formula in graph theory. | 7M |

Paper set by Dr. K. Vijay Kumar

FACULTY OF ENGINEERING & TECHNOLOGY
B. Tech. (CSE & IT) IV-Semester (CBCS) Examination
Object Oriented Programming through JAVA

Time: 3 Hours]

[Max Marks: 70

Answer all Questions
Part-A (Marks: 5x2=10)

1. a) How to create a variable and array in Java?
b) Give an example for nested classes?
c) What is the purpose of final keyword with inheritance?
d) Differentiate byte stream and character based stream?
e) How do you create a frame?

Part-B (Marks: 5x12=60)

2. a) Discuss in detail program paradigms and compare them?
OR
b) What are the control statements provided by Java? Write a simple Java program to implement each.
3. a) Define class, visibility modes and constructor. Implement a Java program for constructor overloading.
OR
b) Discuss the various methods provided by string buffer classes. What is the purpose of string buffer class? Compare it with string builder and string tokenizer.
4. a) List and define the types of inheritances. Implement a Java program for any one type of inheritance.
OR
b) What is a package? What are its uses? Write the steps for creating a package and importing a package? Discuss using example.
5. a) What is exception? How it is handled by using try, catch, throw blocks? Give an example.
OR
b) How reading and writing of files is achieved using byte streams?
6. a) What is an applet? Explain the Skeleton of applet by writing a program for passing parameters to applet?
OR
b) List the controls provided by AWT? Give the syntax to add them? Write a program to use any two controls?

4920/5
FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. (CSE & IT) IV-Semester (CBCS) Examination
Mathematical Foundations in Computer Science

Time: 3Hours]

[Max. Marks: 70

Answer all questions

PART-A (Marks: 5 x 2 = 10)

1. a) Define a partial ordering relation and a Poset.
- b) Define Principal Disjunctive Normal form and Principal conjunctive Normal form.
- c) All birds can fly. Translate into symbol using quantifiers.
- d) Write formal power series expression for $\frac{1}{1+5x}$
- e) Define Euler path and Hamiltonian path.

PART-B (Marks: 5 x 12 = 60)

2. a) i) Define Transitive closure.
ii) Obtain Transitive closure of $R = \{(a, b), (b, c), (c, a)\}$
(Or)
b) Prove that Every chain is a distribution lattice.
3. a) Obtain disjunctive normal form and conjunctive normal form for $\sim (P \vee Q) \Leftrightarrow (P \wedge Q)$
(Or)
b) Verify the validity of the following argument by rules of inference. If diamonds are not expensive, then gold is selling cheaply Gold is not selling cheaply.
Hence, diamonds are expensive.
4. a) Use mathematical Induction to prove that $2^n > n^2$, for each integer $n \geq 5$.
(Or)
b) If n is the product of two positive integers a and b , then either $a \leq n^{1/2}$ or $b \leq n^{1/2}$
(Proof by Contrapositive)
5. a) Find the coefficient of X^{10} in $(x^3 + x^4 + x^5 + \dots)^2$.
(Or)
b) Solve the recurrence relation $a_n - 7a_{n-1} + 12a_{n-2} = 4^n \forall n \geq 2$.
6. a) Define the following graphs and draw the corresponding graphs.
(i) Cycle graph and draw C_5
(ii) Path graph and draw P_3
(iii) Wheel graph and draw W_6
(iv) Complete bipartite graph and draw $K_{2,3}$
(v) Petersen graph and draw $P(7,3)$.
(vi) Complete graph and draw K_4
(Or)
b) State and Prove Euler's formula.

FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. (CSE/IT/Data Science/AI & ML) IV-Semester (CBCS) Examination
DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3 Hours]

[Max. Marks:70

PART- A (Marks: 5 x 2 = 10)

- 1 a) Give the general method of Divide and Conquer strategy?
- b) Define chromatic number. What are its uses?
- c) Give the basic principle of dynamic programming.
- d) Give the general method for greedy method.
- e) Differentiate NP hard and NP complete problem.

PART- B (Marks: 5 x 12 = 60)

- 2 a) What is time complexity? What are the ways to represent time complexity?
OR
b) Explain the implementation of Strassen's matrix multiplication procedure? Derive its complexity?
- 3 a) What is a disjoint set? What operations are performed on them? How they are implemented?
OR
b) What is sum of subsets problem? Discuss how it is solved using backtracking approach.
- 4 a) Construct the optimal binary search tree using dynamic programming for the following instance? Given $n = 4$ (a_1, a_2, a_3, a_4) = (do, if, int, while), $p(1:4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$
OR
b) What is all pairs shortest path problem? How it is solved by using dynamic programming?
- 5 a) Give the implementation of job sequencing with deadlines problem using Greedy strategy.
OR
b) Give the greedy approach for solving knapsack problem.
- 6 a) Solve the following 0/1 knapsack problem with LC Brach and Bound method. Consider the knapsack instance $n = 4$, $(p_1, p_2, p_3, p_4) = (10, 10, 12, 18)$, $(w_1, w_2, w_3, w_4) = (2, 4, 6, 9)$, and $m = 15$.
OR
b) State and prove Cook's theorem?

FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. (CSE & IT) IV-Semester (CBCS) Examination
DIGITAL ELECTRONICS

Time: 3 Hours]

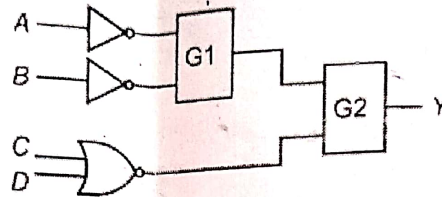
[Max Marks: 70

Answer all questions.
PART-A (Marks: 5x2=10)

- 1 a) Convert the following:

(i) $(A98C)_{12} = ()_3$ (ii) $(746.5)_8 = ()_{16}$

- b) In the figure shown, the output is required to be
- $Y = AB + \bar{C}\bar{D}$
- . Find the gates
- G_1
- and
- G_2
- .



- c) Implement a 1:8 demultiplexer using two 1:4 demultiplexers.
d) Draw the logic diagram of a 4-bit right shift register.
e) Design a CMOS logic circuit to implement $F(A,B,C) = ABC$

PART-B (Marks: 5x12=60)

- 2 a) (i) Find the minimum number of 2-input NAND gates required to realize the Boolean function
- $Y = AB + CD$
- .

(ii) Detect and correct a single-bit error in the 7-bit Received Hamming code 1101001.

- b) Perform the subtraction with the following unsigned binary numbers by taking the 2's complement of the subtrahend: i).
- $100-110000$
- ii).
- $11010-1101$
- iii).
- $100111011 - 10001$

(OR)

- c) Design the Boolean expression using only NAND gates for the function
- $F(A,B,C) = A + B'C$

- d) (i) Perform
- $(A2)_{16} - (31)_{16}$
- using 1's complement method.

(ii) Implement the Boolean expression using only NOR gates: $F = (A+B)(C+D)$

- 3 a) Simplify the following expression using Karnaugh map method and implement it in universal logic.

$$f = \pi M(6,7,8,9).d(10,11,12,13,14,15)$$

- b) Explain the working of a 4-bit serial adder.

(OR)

- c) Design a full adder and draw its logic diagram with NOR logic.

- d) Minimize the function below using the tabular method of simplification:
-
- $Z = f(A,B,C,D) = \bar{A}\bar{B}\bar{C}\bar{D} + \bar{A}\bar{B}C\bar{D} + A\bar{B}C\bar{D} + A\bar{B}C\bar{D} + \bar{A}BC\bar{D} + \bar{A}BC\bar{D} + \bar{A}\bar{B}C\bar{D}$

[P. T. O.]

- 4 a) Implement the Boolean function using 8:1 multiplexer.

$$F = \sum m\{0,1,2,3,4,10,14,15\}$$
- b) Design 3-bit digital comparator and explain with neat sketch.
 (OR)
- c) Construct a 16×1 multiplexer with two 8×1 and one 2×1 multiplexers.
- d) Implement 4-to-16 decoder from two 3-to-8 decoder.
- 5 a) With relevant diagram explain the working of master-slave JK Flip-Flop.
- b) Design a Mod-10 asynchronous counter by using T-FF.
 (OR)
- c) Convert a SR FF into T FF.
- d) Draw the diagram of a 3-bit synchronous up Counter and explain its working along with the waveforms.
- 6 a) Draw and explain the TTL NAND gate with Totem-pole output.
- b) Draw and explain 3-input RTL NOR gate
 (OR)
- c) Explain the following terms
- | | | |
|------------------------|--------------|--------------------|
| i) Fan-in | (ii) Fan-out | (iii) Noise margin |
| (iv) Power dissipation | | (v) Set-up time |

∴

4922/5
FACULTY OF ENGINEERING AND TECHNOLOGY
B.Tech. (CSE & IT) IV-Semester (CBCS) Examination
OPERATING SYSTEMS

Time: 3 Hours]

[Max. Marks: 70

Answer All Questions
PART-A (Marks: 5 x 2 = 10)

- 1 a) Define operating system. List out various services provided by an OS.
- b) What is meant by context switch?
- c) Define starvation in deadlock.
- d) What is page fault?
- e) What is a file? List out different access methods of a file.

PART-B (Marks: 5 x 12 = 60)

- 2 a) Explain in detail the major functions performed by an operating system.
OR
b) Describe the Layered and Monolithic structures of an operating system with a neat diagram. What are the advantages of Layered structure over Monolithic structure?
- 3 a) What is a system call? Explain about fork (), exec (), wait (), exit () system calls with suitable examples.
b) What is process control block? Explain its role in process management.
OR
c) What are CPU Scheduling algorithms? Discuss the working of FCFS and Round Robin algorithms with suitable examples and Gantt charts.
- 4 a) What is critical section problem?
b) Define Semaphore. Discuss producer consumer problem using semaphore.
OR
c) Explain the methods used for deadlock detection and recovery in an operating System.
- 5 a) What is segmentation in memory management? Discuss how it works with an example.
b) Write a short note on file system mounting.
OR
c) Find the number of page faults for the reference string 1 2 3 4 1 2 5 1 2 3 4 5 using FIFO and LRU page replacement algorithms with three-page frames.
- 6 a) Discuss the SCAN and LOOK disk scheduling algorithms. Compare their Performance with FCFS.
OR
b) Write a short note on the principles of protection in operating system.
c) Discuss the concept of the Access matrix and its implementation for enforcing protection in operating system.

4900/5

FACULTY OF ENGINEERING & TECHNOLOGY

B.Tech. (Mech, CSE, IT, EEE, Mining, Data Science) IV-Semester (CBCS) Examination

Constitution of India

Time: 3 Hours]

[Max. marks: 70

Answer All Questions
PART – A (Marks: 5 x 2 = 10)

- 1
- a) Cabinet Mission Plan
 - b) Preamble
 - c) 45 Article
 - d) Concurrent list
 - e) Mandamas writ

PART – B (Marks: 5 x 12 = 60)

- 2
- a) Discuss the Philosophical functions of Indian Constitution.
 - OR
 - b) Explain the salient features of the Constitution of India.
- 3
- a) What are Fundamental Rights? Discuss.
 - OR
 - b) Write an essay on the implementation of Directive Principles of State Policy.
- 4
- a) Explain the features of Federal form of government.
 - OR
 - b) Critically examine the recent trends in centre – state relations.
- 5
- a) Discuss the Judicial Activism in India.
 - OR
 - b) Write a note on Constitutional Provisions for Environmental Protection in India.
- 6
- a) Explain the Composition, Powers and Functions of the Parliament.
 - OR
 - b) Examine the powers and functions of the President of India.