Roll No. _____

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3E1201

3E1201

B.Tech. III Sem. (Main) Examination, April/May - 2022
Artificial Intelligence & Data Science
3AID2-01 Advanced Engineering Mathematics
(AID, CAI, CS, IT)

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions From Part A, All five Questions from Part B and three questions out of five questions from Part C .

Schematic diagram must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As *mentioned in form No. 205).*

PART - A(Word limit 25)   (10×2=20)

1. Given the function $f(x) = \begin{cases} e^{-x}, & x \geq 0 \\ 0, & x < 0 \end{cases}$. Is this function a density function?

2. If E(X) = 2 and E(Y) = 5, then what is the value of E(2X+3Y)?

3. Define normal distribution.

4. Write Chebyshev's inequality.

5. Write two applications of optimization in Engineering.

6. What is the difference between linear and nonlinear programming problems?

7. What is Lagrangian function?

8. Consider the following problem:

    Minimize z = f(X),

    subject to $g_j(X) \leq 0; j = 1, 2, 3, ..., m.$

    Then write the suitable Kuhn-Tucker conditions.

9. What is difference between a slack and surplus variable?

10. For non-degenerate feasible solution of m×n transportation problem, how many independent individual positive assignments will be required?

PART - B(Word limit 100) (5×4=20)

1. Derive moment generating function for Binomial distribution.

2. Fit a straight line to the following data regarding x as independent variable:

x:	0	1	2	3	4
y:	1.0	1.8	3.3	4.5	6.3

3. A company manufactures two products A and B, which are processed in the same machine. It takes 10 minutes to process one unit of product A and 3 minutes for each unit of product B and the machine operates for a maximum of 35 hours per week. Product A requires 0.8 kg and B requires 0.4 kg of raw material per unit. The supply of raw material is 500 kg per week. Market requires at least 700 units of product B every week. Product A costs Rs. 4 per unit and sold at Rs. 10, where as B costs Rs. 6 per unit and sold at Rs. 8. Formulate the linear programming problem to maximize the profit.

4. A beam of length l is supported at one end. If ω is the uniformly distributed load per unit length and the bending moment M at a distance x from the end is given by

   $$M = lx - \frac{1}{2}\omega x^2,$$

   then find the maximum bending moment.

5. Write the dual of the following linear programming problem:

   Maximize $z = x_1 + 4x_2 + 3x_3$

   Subject to $2x_1 + 3x_2 - 5x_3 \leq 2,$
   $$3x_1 - x_2 + 6x_3 \geq 1$$
   $$x_1 + x_2 + x_3 = 4$$

   and $x_1, x_2 \geq 0, x_3$ is unrestricted in sign.

PART - C (Any three) (3×10=30)

1. Joint Distribution function of two discrete random variable X and Y are given by $f(x,y) = c(2x+y)$. Where x and y assumes all integer values such that $0 \leq x \leq 2, 0 \leq y \leq 3$. Find

   i)   c

   ii) $P(X=2, Y=1)$

   iii) $P(X \geq 1, Y \leq 2)$

   iv)   Marginal Distributions

   v)   Check the dependency.

2. Calculate the coefficient of correlation from the following data:

X:	1	2	3	4	5	6	7	8	9
Y:	9	8	10	12	11	13	14	16	15

Also obtain the equations of line of regression and obtain an estimate of Y which should correspond on the average to $X = 6.2$.

3. Write a short note on the classification of optimization problems based on various parameters.

4. Using two phase simplex method, solve:

Max. $z = -x_1 - x_2$

Subject to $3x_1 + 2x_2 \geq 30$

$$-2x_1 - 3x_2 \leq -30$$

$$x_1 + x_2 \leq 5$$

and $x_1, x_2 \geq 0$

5. Using Vogel's Approximation method, find basic feasible solution for the following Transportation problem:

	Destination				Availability
	X	Y	Z	W	
A	1	2	1	4	30
B	3	3	2	1	50
C	4	2	5	9	20
Requirement	20	40	30	10	100

Hence, also find the optimum solution.

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3E1203

3E1203

B.Tech. III Sem. (Main) Examination, April/May - 2022
Artificial Intelligence & Data Science
3AID3-04 Digital Electronics
AID, CAI, CS, IT

Time : 3 Hours   Maximum Marks : 70

Instructions to Candidates:

Attempt **all ten** questions from **Part A**. All **five** questions from **Part B** and **three** questions out of **Five** questions from **Part C**.

Schematic diagrams must be shown wherever necessary. Any data missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

PART - A

(Answer should be given up to 25 words only)   (10×2=20)

(**All** questions are **compulsory**)

1. Prove the following Boolean identities using the laws of Boolean algebra: $(A+B)(A+C) = A+BC$.

2. Draw the symbol and truth table for XOR gate and NAND gate?

3. State and prove Demorgan's laws.

4. Why totem pole outputs cannot be connected together.

5. State advantages and disadvantages of TTL.

6. Define combinational logic. Explain the design procedure for combinational circuits.

7. What is edge - triggered flip - flop? Explain the flip-flop excitation tables for RS FF.

8. Define race around condition.

9. Define sequential circuit.

10. Give the comparison between synchronous and Asynchronous counters.

PART - B

(Analytical/Problem solving questions)   (5×4=20)

(Attempt all **five** questions)

1. Verify that the following operations are commutative but not associative
    i.   NAND
    ii. NOR

2. Write the expression for Boolean function. $F(A,B,C) = \sum m(1,4,5,6,7)$ in standard POS form.

3. What are the advantages of CMOS logic? Explain CMOS inverter with the help of a neat circuit diagram.

4. Implement the following function using a 3 line to 8 line decoder.

    $S(A,B,C) = \sum m(1,2,4,7)$

    $C(A,B,C) = \sum m(3,5,6,7)$

5. Design a mod - 12 Synchronous up counter.

PART - C

(Descriptive/Analytical/Problem solving/Design questions)   (3×10=30)

(Attempt any **three** questions)

1. a. Realize all gates by using :
        i.   NAND gate.
        ii. NOR gate.
    b. Prove that :
        i.   [AB(C+BD)+AB]C = BC.
        ii. (A+B) (A+B) = AB + AB.

2. Minimize the logic function $Y(A,B,C,D) = \sum m(0,1,2,3,5,7,8,9,11,14)$. Use Karnaugh map. Draw logic circuit for the simplified function.

3. What is meant by Wired - AND connectin of digital ICs? What are its advantages and disadvantages? Draw a circuit of TTL gates with Wired - AND connection and explain its operation.

4. Design a 8 to 1 multiplexer by using the four variable function given by $F(A,B,C,D) = \sum m(0,1,3,4,8,9,15)$.

5. Using D - Flip flops and waveforms explain the working of a 4-bit SISO shift register.

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3E1202

3E1202

B.Tech. III Sem. (Main) Examination, April/May - 2022
Artificial Intelligence & Data Science
3AID4-05 Data Structures and Algorithms
AID, CAI, CS, IT

Time : 3 Hours   Maximum Marks : 70

Instructions to Candidates:

Attempt all ten questions from Part A. All five questions from Part B and three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As mentioned in form No. 205).

PART - A (Word limit 25)

(Answer should be given up to 25 words only)   (10×2=20)

(**All** questions are **compulsory**)

1.	Define static and dynamic Array.	(2)
2.	Explain stack.	(2)
3.	Write differences between Array and Queue.	(2)
4.	Write Concept of Header linked list.	(2)
5.	What do you mean by sequential search?	(2)
6.	Define radix sort.	(2)
7.	Explain B-tree.	(2)
8.	Define complete binary tree.	(2)
9.	How to represent graph in memory? Explain.	(2)
10.	Explain Double hashing.	(2)

PART - B (Word limit 100)

(Answer should be given up to 100 words)   (5×4=20)

(All questions are compulsory)

1. Convert following infix expression to postfix expression :
   a. $A+B/C-D^\wedge E-F$.   (2)
   b. $A/B-(C+D)*E/F^\wedge G$.   (2)

2. Write an algorithm to insert a node in doubly linked list.   (4)

3. Explain binary search technique in deatil. (4)

4. Discuss the operations performed on a binary tree. (4)

5. Explain minimum spanning tree. Discuss prims algorithm with suitable example.(4)

PART - C (Any Three)

(Design/Problem solving skills) (3×10=30)

Attempt any three questions.

1. a. How to perform factorial calculation using stack? Explain. (5)

   b. Write an algorithm to delete an item from circular Queue. (5)

2. a. Explain circular linked list. Write an algorithm to insert a node into circular linked list. (5)

   b. Discuss insertion sort with suitable example. (5)

3. What is an AVL tree? Explain the concept of balance factor. Create an AVL tree using following sequences :

   68, 35, 45, 70, 15, 91, 40, 73, 20, 79. (10)

4. Discuss Breadth first search and Depth first search traversal with suitable example. (10)

5. a. Explain Dijkastra's shortest path algorithm in detail. (5)

   b. Write down the algorithm of Bubble Sort. Sort the following elements using Bubble sort :

   68, 98, 35, 48, 62, 52, 30. (5)

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[Total No. of Pages : 2]

3E1204

3E1204

B.Tech. III Sem. (Main) Examination, April/May - 2022
Artificial Intelligence & Data Science
3AID4-06 Object Oriented Programming
AID, CAI, CS, IT

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**. All **five** questions from **Part B** and **three** questions out of **Five** questions from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As mentioned in form No.205)

PART - A
(Word limit 25)
(10×2=20)

1. What is the difference between struct and class in C++?
2. How do you declare a member function in C++?
3. Define constructor in C++?
4. Why inline function is used?
5. What is an abstract class?
6. Can we create object of virtual class in C++?
7. What are static data member in C++?
8. Define Polymorphism?
9. Define function templates?
10. What are the three file stream classes?

PART - B
(Word limit 100)
(5×4=20)

1. What do you mean by exception handling? Explain the four steps of exception handling?
2. What do you mean by friend function in C++?
3. Explain function overriding in C++ with example?
4. Explain Dynamic binding with example.
5. What is OOP? Explain its characteristics.

3E1204 /2022 (1) [Contd....

PART - C

(Any Three)   (3×10=30)

1. Define class? How can we define member function inside and outside the class in C++? Explain with suitable example.

2. Explain :

    a)   new and delete operators.

    b)   inline function.

3. What is inheritance? Explain the types of inheritance? Write a program to add two numbers using multiple inheritance in C++?

4. What is operator overloading? Explain unary and binary opertor overloading in C++ with suitable example?

5. How exception are handled in C++ programming explain with program?

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Roll No. _____   [Total No. of Pages : 2

3E1205

3E1205

B.Tech. III Sem. (Main) Examination, April/May - 2022
Artificial Intelligence & Data Science
3AID4-07 Software Engineering
AID, CAI, CS, IT

Time : 3 Hours   Maximum Marks : 70

Instructions to Candidates:

Attempt all ten questions from Part A. All five questions from Part B and three questions out of Five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (As mentioned in form No.205)

PART - A
(Word limit 25)   (10×2=20)

1. Explain the maintance phase of software life Cycle Model.
2. Differentiate Testing and Debugging.
3. Differentiate between LOC and FP estimation.
4. Identify Requirement analysis task?
5. Discuss process specification?
6. Discuss the characteristics of Good Design?
7. Describe effort estimation?
8. List the design principles.
9. What is Data modeling in software engineering?
10. List the stages of object oriented Design.

PART - B
(Word limit 100)   (5×4=20)

1. Describe software requirement specification in detail?
2. Define COCOMO estimation model in brief.
3. Discuss data and control flow Diagram in detail.
4. Explain Design fundamental in brief.
5. Explain class and object relationships by using an examples.

3E1205 /2022   (1)   [Contd....

PART - C

1. Evaluate all the stages of software life cycle model in a live project.
2. Judge the role of risk analysis in project.
3. Design a finite state Automation machine and explain the working of FSM.
4. Evaluate Data 'architecture' and procedural Design in 'Software Design'.
5. Evaluate the object oriented Design concept in object oriented Analysis.

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B.Tech. III Sem. (Back) Examination, April/May - 2022
Computer Science & Engineering
3CS2-01 Advanced Engineering Mathematics
CS, IT

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

*Attempt **all ten** questions from **Part A**, five questions out of **Seven** from **Part B** and **Four** questions out of **Five** from **Part C**.*

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205)

Part - A

(Answer should be given up to 25 words only)

All questions are **compulsory**   (10×2=20)

1. Define Binomial distribution.

2. Define skewness of the curve.

3. What do you mean by optimization technique?

4. Find the mean of the uniform distribution.

5. Find the variance of the poisson distribution.

6. Define slack and surplus variables in LPP.

7. Define Exponential distribution.

8. Give three characteristic of Normal distribution.

9. Give three application of optimization techniques.

10. Define Kurtosis of the curve.

Part - B

(Analytical/Problem solving questions)

Attempt any **five** questions   (5×8=40)

1. Find the extreme points of the function $f(x,y) = 20x + 26y + 4xy - 4x^2 - 3y^2$.

2. Find the duality of the LPP.

   Max. $z = x_1 + 3x_2$

   s.t. $3x_1 + 2x_2 \leq 6$

   $3x_1 + x_2 = 4$

   and $x_1, x_2 \geq 0$.

3. If 10% of the pens manufactured by the company are defective, find the probability that a box of 12 pens contain.
   i.   Exactly two defective.
   ii. Atleast two defective.
   iii. No defective.

4. Fit a straight line of following data.

x	1	2	3	4	5
y	2	4	6	8	10

5. Solve the Assignment problem.

Tasks ↓	← Subordinates → I	II	III	IV
A	8	26	17	11
B	13	28	4	26
C	38	19	18	15
D	19	26	24	10

6. If θ is the acute angle between the two regression lines in x and y, show that

   $\tan\theta = \left(\dfrac{1-r^2}{r}\right)\dfrac{\sigma_x.\sigma_y}{(\sigma_x^2 + \sigma_y^2)}$ Find the case (i) r = 0 (ii) r = ±1.

7. The first four moments of a probability distribution about the value 5 are 2, 20, 40 and 50. Find the mean, variance, β_1 and β_2.

Part - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any **Four** questions   **(4×15=60)**

1. State Kuhn - Tucker conditions. Use them to solve

   Min. $f(x,y,z) = x^2 + y^2 + z^2 + 20x + 10y$

   s.t. $x \geq 40$

   $x + y \geq 80$

   $x + y + z \geq 120$

2. Find the coefficient of correlation between x and y. Also find the regression equations x on y and y on x of the following data

x	45	55	56	58	60	65	68	70	75	80	85
y	56	50	48	60	62	64	65	70	74	82	90

3. Solve the transportation problem by using Vogel's approximation and test the optimality.

Destination / Origin	D_1	D_2	D_3	Available
O_1	2	7	4	5
O_2	3	3	1	8
O^3	5	4	7	7
O_4	1	6	2	14
Demand	7	9	18	34

4. Solve the LPP by simplex method.

   Min. $Z = x_1 - 3x_2 + 2x_3$

   s.t. $3x_1 - x_2 + 3x_3 \leq 7$

   $-2x_1 + 4x_2 \leq 12$

   $-4x_1 + 3x_2 + 8x_3 \leq 10$

   and $x_1, x_2, x_3 \geq 0$.

5. Given the joint probability density function

$$f(x,y) = \begin{cases} \dfrac{2}{3}(x+2y), & 0 < x < 1, \ 0 < y < 1 \\ 0, & elsewhere \end{cases}$$

Find

i. Marginal density of X and Y.

ii. Conditional density of X given Y = y.

iii. Conditional density of Y given X = x.

iv. Evaluate $P\left(\dfrac{X \leq 1/2}{Y = 1/2}\right)$.

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3E1137

3E1137

B.Tech. III Sem. (Back) Examination, April/May - 2022
Computer Science & Engineering
3CS3-04 Digital Electronics
CS, IT

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of Seven from Part B and Four questions out of Five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed be stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are **compulsory** (10×2=20)

1. Find radix r of $(23)_r + (12)_r = (101)_r$.

2. Convert $(475.25)_8$ to its decimal equivalent.

3. Perform $(1011)_2 - (0100)_2$ using 1's complement method.

4. Convert the expression $Y = (A+B)(A+C)(B+\overline{C})$ in to standard POS form.

5. Implement the Boolean $Y = AB\overline{C}$ expression using NAND gate only.

6. State the difference between Latch and Flip Flop.

7. Write the characteristic equation of T Flip Flop.

8. How many JK flip flops are required to implement modules 25 counter?

9. Represent $(48)_{10}$ in 8-4-2-1 BCD and binary form.

10. Define propagation delay in logic family.

PART - B

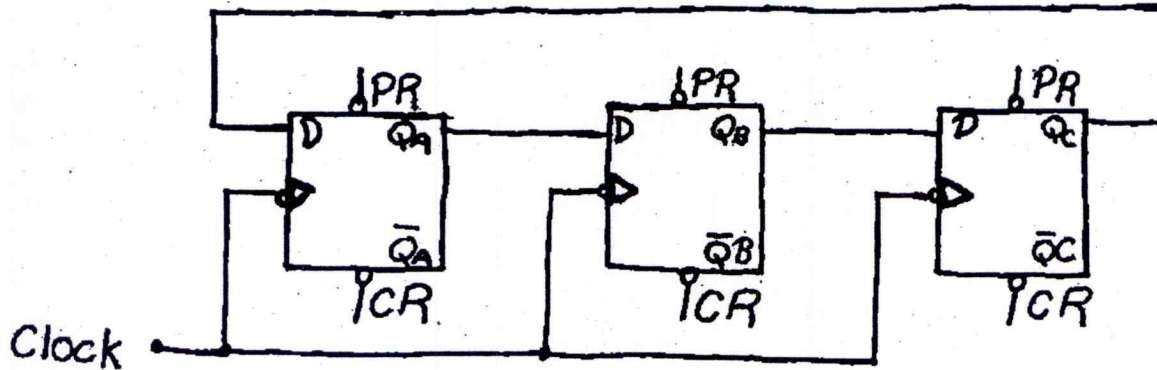(Analytical/Problem solving questions)

Attempt any **five** questions (5×8=40)

1. Implement Full adder using 3:8 decoder.

2. Convert RS Flip Flop into JK Flip Flop. Explain its process also.

3E1137/2022 (1) [Contd....

3. Implement the following Boolean function using 8:1 multiplexer.

$F(A,B,C,D) = \sum m(2,4,5,7,10,14)$.

4. Consider the given circuit shown in figure. Here, initial output condition is $Q_A Q_B Q_C = 010$. Write the truth table of ouput $Q_A Q_B Q_C$ for four clock pulses.

Clock

5. Implement 2 input NAND gate using CMOS logic.

6. Design an Octal to Binary encoder.

7. Explain the working of NAND gate using High Threshold logic gate (HTL).

PART - C
(Descriptive/Analytical/Problem Solving/Design questions)
Attempt any **Four** questions   (4×15=60)

1. Simplify the following Boolean function using tabulation method and verify using K-map.

$F(A,B,C,D) = \sum m(0,1,4,6,8,9,10,12) + d(5,7,14)$.

2. Draw the neat circuit diagram of TTL NAND gate with totem pole output and explain.

3. Design a synchronous decode counter.

4. Describe the working of Bi-directional shift register. Design Ring counter also.

5. Write short note on **(any three)**
    i)   Weighted codes.
    ii)   Emitter coupled Logic (ECL).
    iii) Full subtractor.
    iv)   Universal gates.

3E1137   (2)

Roll No. _____ [Total No. of Pages : 2]

3E1140

3E1140

B.Tech. III sem. (Back) Examination, April / May - 2022
Computer Science & Engineering
3CS4-07 Software Engineering
CS,IT

Time : 3 Hours

Maximum Marks : 120
Min. Passing Marks : 42

Instructions to Candidates:

Attempt all ten questions from Part A, five question out of Seven from Part B and Four questions out of Five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No.205

PART - A
(Answer should be given up to 25 words only)
All questions are **compulsory**   (10×2=20)

1. Which software process model is most suitable when the requirements keep on changing and why?
2. Why verification is called a static method?
3. What is scope of software?
4. For a data item in data dictionary what all information is stored?
5. Name the major elements of the analysis model.
6. Which phase of software development life cycle is most ambigous and why?
7. Name the diagrams offered by unified modeling language (UML).
8. Explain cohesion.
9. Distinguish between object - oriented software engineering and conventional software engineering.
10. Explain user - interface design process.

PART - B
(Analytical/Problem solving questions)
Attempt any **five** questions   (5×8=40)

1. Draw a data flow diagram of online food delivery system for all 3 levels : 0 - level, 1- level and 2 - level.
2. i. Draw a sequence diagram for 'money withdraw' application of ATM.   (4)
   ii. Differentiate between sequence diagram and collaboration diagram.   (4)

3. i. Explain the waterfall model along with its advantages, drawbacks and applicability. **(6)**

   ii. Compare waterfall model with waterfall model. **(2)**

4. i. Describe various non - functional requirements. **(4)**

   ii. Explain Formal Technical Review. **(4)**

5. Describe V-shaped software process model along with its advantages, drawbacks and applicability.

6. If a project has 32000 line of code, calculate using COCOMO, the effort and duration required to develop all three kinds of software.

7. Consider a project with following function units

   Number of user inputs = 50

   Number of user outputs = 40

   Number of enquiries = 35

   Number of user files = 6

   Number of external interfaces = 4

   Assuming all complexity adjustment factors as average, calculate the function points for the project.

PART - C

(Descriptive/Analytical/Problem Solving/Design questions)

Attempt any **Four** questions **(4×15=60)**

1. i. Explain Design concepts. **(10)**

   ii. Explain Coad and Yourdon characteristics. **(5)**

2. i. Draw a class diagram for college management system. **(10)**

   ii. Explain different types of associations in classes. **(5)**

3. For an Online shopping application draw :

   i. Activity Diagram. **(8)**

   ii. Use - Case Diagrams. **(7)**

4. i. Describe Risk management process. **(9)**

   ii. List at least three risks with their level of impact and possible mitigation techniques. **(6)**

5. List and Briefly describe the components of SRS document (IEEE format) **(15)**

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3E1651

3E1651

B.Tech. III Sem. (Old Back) Examination, April/May - 2022
Computer Sc. & Engg.
3CS1A Computer Sc. & Engg.
CS, IT

Time : 3 Hours   **Maximum Marks : 80**
                                                       Min. Passing Marks : 24

Instructions to Candidates:

*Attempt any **five** questions, selecting **one question** from **each unit**. All questions carry **equal** marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination (As mentioned in form No. 205).

UNIT - I

1. a) Draw and define diode load line. Also define the load line under AC conditions.   **(6)**

    b) Find the expression for Hall coefficient and explain the application of Hall effect?   **(6)**

    c) Define fermi level in semiconductor material?   **(4)**

(OR)

1. a) Explain the working of voltage multiplier using suitable example? **(8)**

    b) Explain and compare between, conductor, semiconductor and Insulator with example?   **(8)**

UNIT - II

2. a) Draw Eber's Null model and explain its working for CE configuration? **(8)**

    b) Explain the concept of thermal runway in transistor amplifier?   **(8)**

(OR)

2. a) Draw circuit of fixed bias and define its stability factor?   **(8)**

    b) Explain various methods of stabilization techniques in brief?   **(8)**

3E1651 /2022   (1)   [Contd....

UNIT - III

3. a) Define Miller's theorem and its dual. How this theorem is useful in solving amplifier circuits? **(8)**

   b) Why common collector is called "Emitter follower"? Draw its circuit and find the expression for voltage gain? **(8)**

(OR)

3. a) Find the voltage gain for common source configuration if $\mu = 10^{-3}$ and $g = 10^{-5}$ then calculate the voltage gain for a load $R_c = 10k\Omega$? **(8)**

   b) Draw the frequency response of an RC coupled amplifier and mention on it (i) 3-dB cut off frequencies (ii) Bandwidth. **(8)**

UNIT - IV

4. a) Define following :
   i) Forward voltage gain.
   ii) Gain with feedback.
   iii) Feedback factor.
   iv) Stability factor of feedback amplifier. **(4×2=8)**

   b) What is current shunt feedback? How it modifies input and output resistance of an amplifier? **(8)**

(OR)

4. a) Explain feedback amplifiers with its classification and concept? **(8)**

   b) Find the relation between R_i and R_f for
   i) current series feedback.
   ii) voltage shunt feedback. **(8)**

UNIT - V

5. a) Design wien bridge oscillator for generating a signal at 1.5 kHz? **(8)**

   b) Explain difference between monostatic and Bistable Multi vibrators? **(8)**

(OR)

5. Write short notes on : **(4×4=16)**

   i) Working of schmitt trigger.

   ii) Astable multivibrator.

   iii) Colpitts oscillator.

   iv) Crystal oscillator.

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3E1654

3E1654

B.Tech. III Sem. (Old Back) Examination - 2022
Computer Sc. & Engg.
3CS5A Object Oriented Programming
EE, EX, CS, IT

Time : 3 Hours **Maximum-Marks : 80**
Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

UNIT - I

1. a) Differentiate between classes and structure in C in detail. **(8)**

    b) What do you mean by structure as user defined data type? Explain with suitable example. **(8)**

(OR)

1. a) Explain pointer to structure with suitable example. **(8)**

    b) What is the difference between structure and union in C. **(8)**

UNIT - II

2. a) Explain Data hiding with example. **(8)**

    b) Discuss the concept of class and object. **(8)**

(OR)

2. a) Explain constructor and destructor function in detail. **(8)**

    b) Discuss friend function with suitable example. **(8)**

UNIT - III

3. Overload + operator so that it can be used to concatenate two character string. Write code in C++. **(16)**

(OR)

3. a) Explain function overloading with suitable example. **(8)**

    b) Discuss operator overloading with example. **(8)**

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UNIT - IV

4. a) Explain the concept of Base class and derived class. (8)
    b) What is inheritance? Explain Multiple and multilevel inheritance. (8)

(OR)

4. a) Explain the concept of public, private and protected inheritance. (8)
    b) What is dynamic binding and virtual function? Explain in detail. (8)

UNIT - V

5. a) Explain the concept of virtual base classes. (8)

    b) Discuss Templates with example. (8)

(OR)

5. What is exception handling? Discuss the exception handling in detail. (16)