SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY (AUTONOMOUS)

**MID TEST – I**

Year : II B.Tech I Sem — Date :30-09-2024 (FN)
Branch: Common to[CSE, CSM,CSD,CSE(AI), CSE(CS),CSE(BS), CSE(IOT) & IT] ] — Time : 2 hrs
Subject: Discrete Mathematics & Graph Theory(23AHS17 — Max. Marks : 25

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## PART-A

**1. Answer all questions and all questions carries Two marks** — **5 x 2 = 10 M**

I. Construct the truth table for the statement $P \wedge (P \rightarrow Q)$. [CO1-Understand]
II. Write the inverse and contra positive of the implication statement "If a quadrilateral is a square then it is a rectangle". [CO1-Remember]
III. Give any of the two laws of statement algebra. [CO1-Remember]
IV. Write the principle of inclusion and exclusion formula. [CO2-Remember]
V. State the pigeonhole principle. [CO2-Understand]

## PART-B

**Answer all questions and each question carries TEN marks.** — **3 x 10 = 30 M**

**( Part-B is condemned to 5 marks )**

2. a). Prove that the compound statement $[(p \rightarrow q) \wedge (q \rightarrow r)] \rightarrow (p \rightarrow r)$ is a tautology. [CO1-Apply]

OR

b). Write the following proposition in symbolic form
a) All men are good
b) No men are good
c) Some men are good
d) Some men are not good [CO1-Understand]

3. a). i). Obtain the P.D,N.F of $p \Leftrightarrow q$.
ii) Obtain the P.C,N.F of $(p \wedge q) \vee (\sim p \wedge \sim q)$. [CO1-Apply]

OR

b). Prove that $R \vee S$ follows logically from the premises
$C \vee D,\ C \vee D \rightarrow \sim H,\ \sim H \rightarrow (A \wedge \sim B),\ (A \wedge \sim B) \rightarrow R \vee S$. [CO2-Apply]

4. a) A software company requires 30 programmers to handle system programming jobs and 40 programmers for application programming. If the company appoints 55 programmers to carry out these jobs .(i) How many of these perform jobs of both types? (ii) How many handle only system programming jobs? (iii) How many handle only application programming? [CO2-Apply]

OR

b) Define the following definitions with example
i) Group ii) Abelian Group iii) Sub Group iv) Group Homomorphism
v) Isomorphism. [CO2-Apply]

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY**
**(Autonomous)**
II B-Tech – I Semester – Midterm I Examination October - 2024
CSE (AI & ML)
**Subject code & Name: 23ACA01 ARTIFICIAL INTELLIGENCE**
**Max Marks: 25 Marks**

**Date:** 03/10/2024 **Time:** 2 Hours

## PART – A

**2x5=10 Marks**

**Answer all the questions. Each question carries two marks**

1. Define Artificial Intelligence. (CO1 Remember)
2. Specify any Four AI Problems. (CO1 Remember)
3. How to Formulate Problem in AI? (CO1 Understand)
4. List out the difference between BFS and DFS. (CO2 Analyse)
5. Define Problem Reduction. (CO2 Remember)

## PART – B

**3x5=15 Marks**

**Answer all the questions. Each question carries five marks**

6(a) Explain in detail about Foundation of AI and specify its characteristics.(CO1 Understand)

**(Or)**

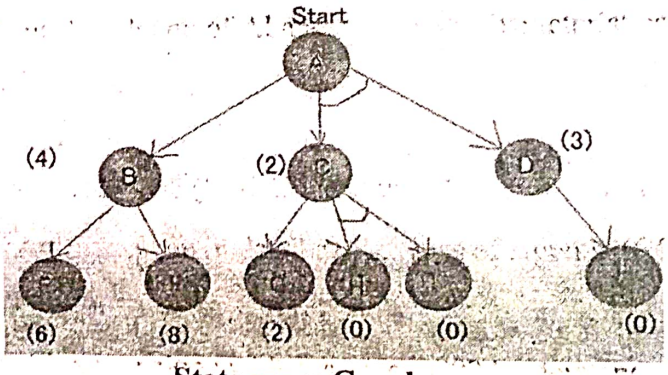
(b) Describe History of AI Evolution? (CO1 Understand)

7(a) Define Structure of Agent Explain in detail about types of Agents. (CO1 Remember)

**(Or)**

(b) Explain in detail Hill Climbing along with example. (C02 Understand)

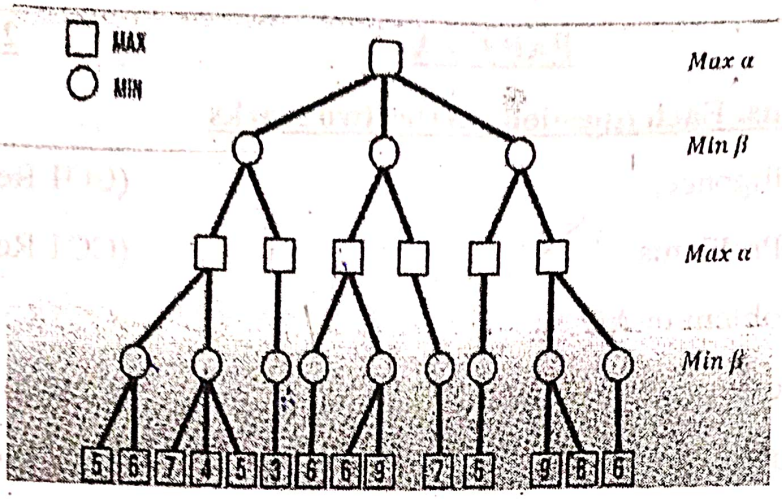
8(a) Write in detail AO* Algorithm and Solve the given state space problem below: (C02 Understand)




**State space Graph**

**(Or)**

(b)Explain in detail Alpha – Beta Pruning and solve the given problem below: (C02 Understand)




**Alpha-Beta Problem**

SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY
(AUTONOMOUS)

R23

Class & Branch: II B. Tech I SEM
Sub: UNIVERSAL HUMAN VALUES – UNDERSTANDING HARMONY AND ETHICAL HUMAN CONDUCT (23AMB01)
Date: 01-10-2024

**Mid Test -I**
(COMMON TO ALL BRANCHES)

Time : 2 Hrs
Max Marks: 25

## Part-A

**Answer all the questions. All questions carry equal marks** **5X2 = 10 marks**

1. What is the purpose of Value Education? (CO1-Remembering)
2. What is meant by "Basic Human Aspiration"? (CO1-Remembering)
3. Define "The body as an instrument of the self". (CO2-Remembering)
4. Justify the "Human Being is more than just the body". (CO2-Understanding)
5. What is Self-Regulation? (CO2-Understanding)

## Part-B

**Answer all the questions. All questions carry equal marks** **3X5 = 15 marks**

6 a) Discuss about self-exploration is a process of dialogue between "What you are" and "What you really want to be". (CO1-Remembering)

OR

b) Explain briefly about the needs of the self and body. (CO2-Understanding)

7 a) How our state today in terms of fulfilment of relationship and physical facility? (CO1-Remembering)

OR

b) Define Right utilisation of the body. Explain its key components. (CO2-Understanding)

8 a) "Natural acceptance is Innate, Invariant and Universal", Explain this statement with an example. (CO1-Understanding)

OR

b) What are the characteristics and activities of 'I (self)' and 'Harmony'? Explain in detail. (CO2-Understanding)

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(Autonomous)**

**RVS Nagar, Chittoor – 517217**

**MID – I – Sep - 2024**

**Class & Branch: II B. Tech / I Sem**

**(Commonto CSE, CSE(AI&ML), CSE(Data Science), CSE(AI), CSE(CS), CSE(IOT), CSE(BS), IT)**

**Date: 05/10/2024(FN)**

**Time : 2Hr** **Subject: OBJECT ORIENTED PROGRAMMING THROUGH JAVA (23ACS06)**

**Marks: 25**

## PART – A

**Answer all Questions (5 * 2 = 10)**

1. a. Define Static variable and static method. (CO1 / Remembering)
   b. Describe the need for a final variable with an Example. (CO1 / Understanding)
   c. Explain the Ternary Operator with an example. (CO1 / Understanding)
   d. Define class and objects with syntax. (CO2 / Remembering)
   e. Write a Java program to find the factorial of a given number using the Recursive method. (CO2 / Understanding)

## PART – B

**Answer all Questions ((3 * 10 = 30) 30/2=15 Marks)**

2. a) Explain the following statements with an example program. (CO1 / Remembering)
   i) Iteration statements ii) Jump Statements

   (OR)

   b) Explain OOP principles in detail. (CO1 / Remembering)

3. a) Define the constructor. Explain the various types of constructors with example programs.

   (OR) (CO2 / Remembering)

   b)WriteaJAVAprogramto implement the class mechanism.Createaclass, methodsand invoke them inside the main method. (CO2 / Remembering)

4. a) Explain the following keywords with an example program. (CO2 / Remembering)
   I) Final - II) this.
   i) Final Method ii) Final Class

   (OR)

   b) Write a JAVA program tosearchforan elementin a givenlistof elements using a binary search mechanism. (CO2 / Understanding)

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY**

**(Autonomous)**

**I Sessional Examination** Algorithm Analysis

**ADVANCED DATASTRUCTURES (23ACS05)**

**(Common to CSE,CSE(AI&ML),CSD,CSC,CSE(AI),CSE(IOT),IT, CSBS)**

**Date: 04/10/2024** **Time: 10.00AM - 12.00PM**

**Year/Sem: II/I** **Total Marks: 25 Marks**

**Part –A (5 * 2=10 Marks) (Answer all the questions)**

1. Define time complexity. **(CO1/ Remembering)**
2. What is an AVL tree? Explain with an example. **(CO1/ Remembering)**
3. What is B Tree and what are the properties of a B-tree? **(CO2/Remembering)**
4. What is Heap Tree? Differentiate the Max heap and Min heap. **(CO2 /Analyze)**
5. Explain adjacency matrix and adjacency list of a graph with examples. **(CO2 /understand)**

**Part –B (3* 10=30Marks) (Answer all the questions)**

6.a)Differentiate between Big-O, Omega (Ω), and Theta (Θ) notations with suitableexamples. Write the binary search algorithm and prove that it's time complexity is O(log n). **(CO1/Analyze)**

(OR)

6. b)Explain the different rotations in AVL tree. Given the following sequence of elements, show how an AVL tree is constructed by performing the necessary rotations: 10, 20, 30, 40, 50, 25. Explain each step in detail. **(CO1/Apply)**.

7. a) Write a code to create a structure BTreeNode of order M. Given a B-tree of order 3 (minimum degree t = 2), insert the following elements in sequence and show the tree after each insertion: 8, 9, 10, 11, 15, 16, 17, 18, 20, 23. **(CO1/Remember)**

(OR)

7.b)Show the process of deleting the root element from a min-heap. Perform deletion on the following heap: [10, 15, 20, 30, 40, 50]. What is heapify? Write the code for heapifyMax. **(CO2/Understand)**

8.a).Write the algorithm for Quick sort. Sort the following list using Quick Sort and explain each step: [24, 3, 45, 9, 29, 15, 38, 12]. **(CO2 / Understand)**

(OR)

8.b)Explain the Strassen's Matrix Multiplication Method OR Write the code for Mergsort and Merge function andapply Merge Sort to the following array : [38, 27, 43, 3, 9, 82, 10]. **(CO2/Analyze)**