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Name of Examination : **Winter 2020** - (Preview)

Course Code & Course Name : **CO204U - Discrete Structures and Graph Theory**

Generated At : **19-04-2022 10:31:41**

Maximum Marks : **60**

Duration : **3 Hrs**

[Edit](#) [Print](#) [View Answer Key](#) [Close](#) **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

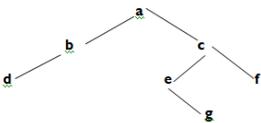
1. All questions are compulsory.
2. Illustrate your answer with suitable figures/sketches wherever necessary.
3. Assume suitable additional data; if required.
4. Use of logarithmic table, drawing instruments and non programmable calculators is allowed.
5. Figures to the right indicate full marks.

- 1) Solve all
- a) Explain set operation with Venn diagram . [6]
- a) Union
- b) intersection
- c) symmetric difference
- b) Verify that the preposition [6]

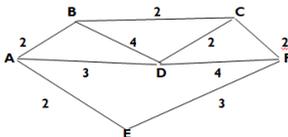
$$p \vee \sim(p \wedge q)$$

is tautology.

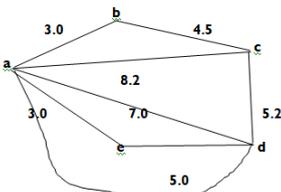
- 2) Solve all
- a) Explain Reflexive symmetric and transitive relation with one example [6]
- b) Let $L = \{1, 2, 3, 5, 30\}$ and R be relation 'is divisible by' prove that , L is lattice [6]
- 3) Solve any two
- a) Find which of following relation are function and given domain and co domain [3]
- i). $\{(1,0) (1,1) (2,8) (5,9)\}$
- $A = \{1, 2, 5\}$
- $B = \{0, 1, 8, 9\}$
- ii). $\{(1,2) (3,7) (4,8) (5,12)\}$ [3]
- $A = \{1, 3, 4, 5\}$
- $B = \{2, 7, 8, 12\}$
- b) Explain types of function with proper example [6]
- c) Solve All
- i). Draw binary search tree by inserting following number from left to right . [3]
- 11, 6, 8, 19, 4, 10, 5, 17, 43, 49, 31
- ii). Find inorder , preorder and post order tranversed by binary tree step by step [3]



- 4) solve ant two
- a) Use Dijkstro's algorithm to find shortest path between 'A' to 'F' in given graph [6]



- b) Find minimum spanning by prims algorithms [6]



- c) Show that Z (set of integer) satisfies properties : closer , associative , existence of identity , existence of inverse , under binary operation addition [6]
- 5) Solve any two
- a) Differentiate prims and kruskal's algorithm [6]
- b) Define the terms [6]

- i). Semi Group
 - ii). Monoid Group
 - iii). Group
 - iv). Abelian group
 - v). Cyclic Group
 - vi). quotient Group
- c) Explain following terms with example.
- i). Eulerian path
 - ii). Complete Graph
 - iii). Planar Graph

[2]

[2]

[2]

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