|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **http://chennai.vit.ac.in/icmce2013/images/vit_logo.png** | | | | | | | | |
| **Mid Term Examination – June 2015** | | | | | | | | |
| Programme | | | : | **M.Tech.,(SDM)** | Code | : | **MAT513** | | |
| Course | | | : | **Mathematical Foundation for Computer Science** | Max. Marks | : | **50** | | |
| Time | | | : | **1½ Hours** |  |  |  | | |
| **Answer Any Five Questions** | | | | | | | | |
| 1. | a)    b) | Check whether the following is a tautology or not?.  Here ~ denotes the negation operation.  Obtain the PCNF and PDNF of the above expression. | | | | | | 5+5 | |
| 2. | a)    b) | Check whether the following graphs are isomorphic or not    Show that the following premises “It is not sunny this afternoon and it is colder than yesterday. We will go to the playground only if it is sunny. If we donot go to the ground then we will go to movie. If we go to movie then we will return home by sunset” imply “We will return home by sunset”. | | | | | | 5+5 | |
| 3. | a) | Find the number of paths of length three from A to F for the following graph | | | | | | 5 | |
|  | b) | If G and H are isomorphic then show that are Isomorphic | | | | | | 5 | |
| 4. |  | Represent the compound proposition using ordered rooted trees. Write these expressions in preorder, inorder and postorder. | | | | | | 10 | |
| 5. | a)    b) | Apply Dijkstra’s algorithm to find the shortest distance between the source *s* and sink *t*.    Find the minimum spanning tree for the following graph  C:\Users\VITCC\Desktop\Untitled.png | | | | | | 5+5 | |
| 6 | a)    b) | Determine whether this argument is valid or not “If superman were able and willing to prevent the evil, he would so. If superman were unable to prevent the evil, he would be impotent. If he were unwilling to prevent evil, he would be malevolent. Superman does not prevent evil. If superman exists he is neither impotent nor malevolent. So superman does not exists”.  Check the consistency of the premises: “The stock prices go down if the prime interest rate goes up”, “People are unhappy when stock prices go down”, “The prime interest rate does go up” and “People are unhappy”. What kind of conclusion you can make from the above propositions using inferences. | | | | | | 5+5 | |
|  | | | | | | | | |