Mid-West University

Examinations Management Office

Birendranagar, Surkhet

End Semester (Alternative/Physical) Examinations -2078

Bachelor level/ B.Sc / 2nd Semester   Full Marks : 60
Time: 3hrs   Pass Marks : 30
 Subject : Discrete Structure (COM421)

Candidates are required to give their answer in their own words as far as practicable. The figures in the margin indicate full marks.

Attempt ALL questions   **[6×10=60]**

1. Define domain and range in function. Explain different techniques to represent the relation.
2. a) What is proposition? Suppose that a CSIT department of MWU contains 10 men and 15 women. How many ways are there to form a committee with six members if it must have more men than women?
   b) State and prove Pascal's Identity and Triangle.
3. Differentiate between tree and forest. Define spanning tree. Illustrate any one algorithm to find the minimum spanning tree.

   OR

   a) State and prove the pigeonhole principle with example.
   b) Derive the Binomial theorem. What is the coefficient of xy^3 in $(x+y)^4$?
4. Write about the indegree and outdegree of graph. Describe the adjacency list and adjacency matrix representation of graph.
5. Check whether the Relation R on {1,2,3,4} is transitive or not?
   R = { (1,1),(1,2),(2,1)(2,2),(3,3)(4,4)} Write notes on: Eular path vs. Eular circuit, Hamiltonian path vs. Hamiltonian circuit

   OR

   a) How many permutation of the letters ABCDEFGH contain the string BCA and ABF? What is the value of postfix expression 723*-4↑93/+?
   b) Give an example of super set and subset and explain recursively defined function with example.
6. a) Clarify the walk, trail and circuit.
   b) "Every walk from any two verticals U n V in graph contains a path from these vertices.", Justify.

THE END