

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, November 2024
B. Tech. in Computer Science Engineering, Semester-VII

Roll No.....

Course Code: CS1236

Time: 2 Hours 30 Mins

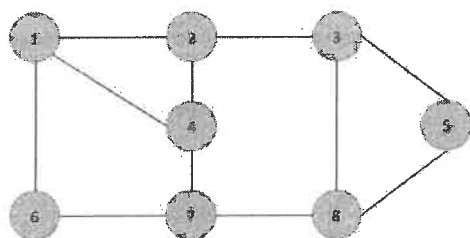
Max. Marks: 30

Course Name: Advanced Data Structures

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Assume suitable data wherever required and mention it clearly.
3. Answer Q5 or Q6 and rest all four questions are compulsory.

Q1.	A. State Fleury's Algorithm to identify Euler's Path in a Given graph (use pseudocode) B. Find the Euler's path in the following graph - showing the steps clearly.	02 03 C06
Q2.	A. "An Approximate Algorithm is a way of approach NP-COMPLETENESS for the optimization problem." - Justify B. In the following graph find the minimum vertex cover using a) Brute force and b) approximation technique. Calculate the performance ratio using the approximation technique.	03 04 C07

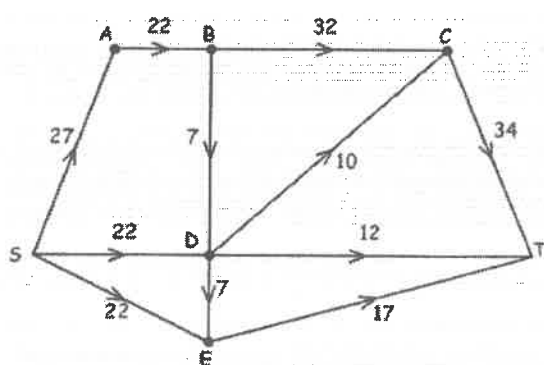


Q3.

A. Use Ford-Fulkerson Algorithm to find the maximum flow in the following network.

Define each terms to be used clearly.

State the pseudocode clearly stating the steps.



Each edge represents the capacity of the corresponding path.

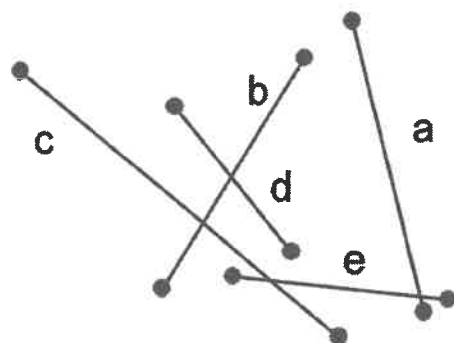
B. State the max-flow theorem and show the min-cut for the aforesaid graph. (Briefly explain the procedure used to obtain the min-cut)

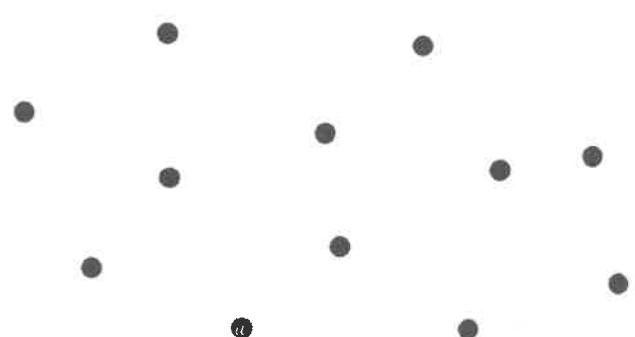
Q4.

A. State Kuhn's Algorithm and its application for Bipartite Matching.

B. How do you identify intersection between any given two lines using orientation.

C. Use plane sweep algorithm to identify number of intersections for the following set of line segments. State the pseudocode clearly with diagrammatic steps. (Use Event Queue and segment list – showing the sequence)



Q5.	A. Define convexity of a polygon and how is it used to determine a convex Hull? B. Find the convex hull for the following set of points using Graham's Scan Algorithm clearly showing the steps diagrammatically.  Mark the points as per your convenience. State the pseudocode used clearly.	02 03 CO 6
Q6	OR A. State the steps for formulating linear programming problems. B. Define duality in linear programming problem. C. "If the primal is a minimization problem, then the dual is a maximization problem (and vice versa)." – Explain with an example.	02 01 02 CO 4
