

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

M.Tech-I Semester (SE)

COURSE CODE(CREDITS):11M1WCE114(3)

MAX. MARKS: 15

COURSE NAME: Modelling Simulation and Computer Applications

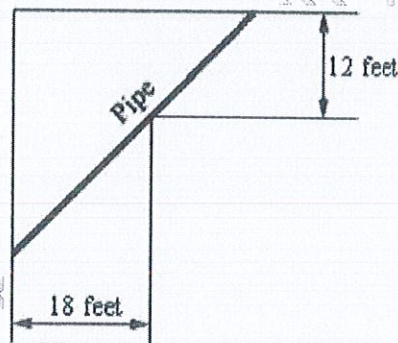
COURSE INSTRUCTORS:Dr. Tanmay Gupta

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory. (b) Marks are indicated against each question in square brackets. (c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.1 A piece of pipe is being carried down a hallway that is 18 feet wide. At the end of the hallway there is a right-angled turn and the hallway narrows down to 12 feet wide. What is the longest pipe (always keeping it horizontal) that can be carried around the turn in the hallway?

[3]



Q.2 With an example explain the process of modelling and simulation?

[3]

Q.3 A farmer feeds his cows a feed mix to supplement their foraging. The farmer uses two types of feed for the mix. Corn feed contains 100 g protein per kg and 750 g starch per kg. Wheat feed contains 150 g protein per kg and 700 g starch per kg. Each cow should be fed at most 7 kg of feed per day. The farmer would like each cow to receive at least 650 g protein and 4000 g starch per day. If corn feed costs \$0.40/kg and wheat costs \$0.45/kg, then what is the optimal feed mix that minimizes cost? Setup the problem as LPP and write an initial Simplex table deciding the entering and the leaving variable.

[4]

Q.4 A company produces two types of items, P and Q that require gold and silver. Each unit of type P requires 4g silver and 1g gold while that of type Q requires 1g silver and 3g gold. The company can produce 8g silver and 9g gold. If each unit of type P brings a profit of \$44 and that of type Q \$55, determine the number of units of each type that the company should produce to maximize the profit. What is the maximum profit? Solve this linear program graphically.

[5]