JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

UNIVERSITY EXAMINATIONS FOR THE DEGREE IN SCIENCE IN CONSTRUCTION MANAGEMENT

3RD YEAR 1ST SEMESTER 2022/2023 ACADEMIC YEAR

CENTRE: MAIN CAMPUS

COURSE CODE: TCM 1303

COURSE TITLE: CONSTRUCTION PROJECT PLANNING AND CONTROL

EXAM VENUE: STREAM: BSc CONSTRUCTION MGT

DATE: ../2022   EXAM SESSION:

DURATION: 2 HOURS

Instructions

1. Answer question 1 (Compulsory) and ANY other two questions
2. Candidates are advised not to write on question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room

QUESTION ONE (30 Marks)

a) (i)What is an inventory model?
   (2 Marks)

 (ii)Mention 3 types of inventory management models.
 (3 Marks)

b) State three types of decisions.
   (6 Marks)

c) A bicycle maker makes 3- and 5-speed bikes. The plant makes 100 frames per day. Tires, brakes, and gears are made by a supplier. The maker has to put a finish and assemble. There are 40 hours of finishing and 50 hours for assembling per day. The profit is 12 bucks for a 3 speed and 15 for a 5 speed. Number of hours per bicycle needed for,

	3 Speed	5 Speed
Finishing	1/3	1/2
Assembling	1/4	2/3

Using Simplex Method Theory, determine,
   i)   Use letters to represent the variables
           (1 Mark)
   ii)   Identify the decision variable
           (4 Marks)
   iii)   The objective function
           (1 Mark)
   iv)   Introduction, Slack variables
           (2 Marks)
   v)   The first tableau and basis of getting the entering value and departing value   (2 Marks)
   vi)   The basic feasible solution.
           (1 Mark)

d) Give 4 Comparisons of the two techniques Project Evaluation and Review Technique (PERT) and Critical Path Model (CPM). (4 Marks)

e) (i) What is Markov decision process?
(2 Marks)
(ii) State what is contained in Markov decision process Model.
(3 Marks)

QUESTION TWO (20 Marks)

a) What is Operation Research (OR)?
(3 Marks)
b) State what it involves.
(3 Marks)
c) State four main steps that constitute the process to formulate solving linear programming problems (4 Marks)
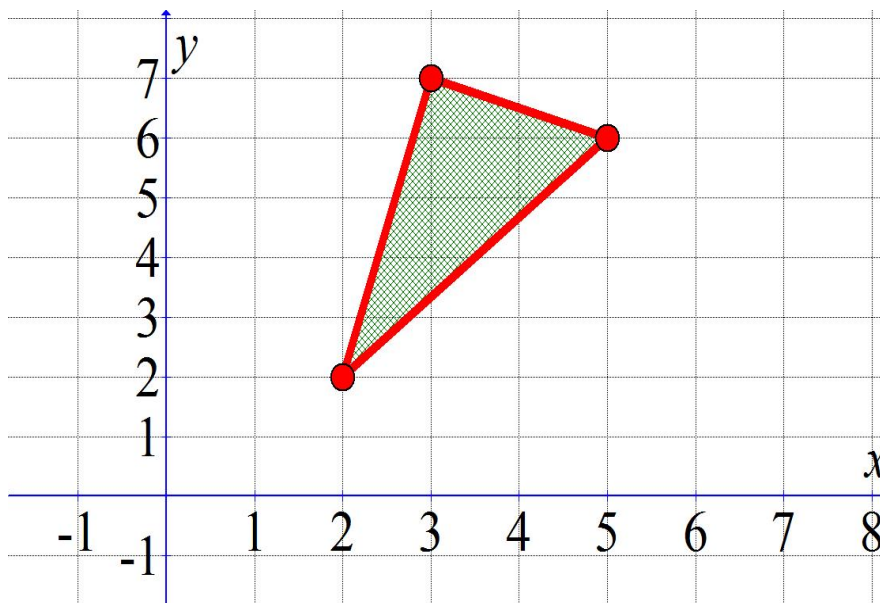

Figure 1

d) Given the objective function P=10x-3y and the following feasible set,
   A. Find the maximum and point where the maximum occurs

   B. Find the minimum value and point where the minimum occurs

(4 Marks)

e) A small firm builds two types of garden sheds

A) Requires 2 hours for machine time and 5 hours for craft time

B) Requires 3 hours of machine time available and 5 hours of craftsman time.

Each day there are 30 hours for machine and 60 hours for crafty time,

The profit on each type A shed is 60 Kes and on type, B shed is 84 Kes,

Formulate the appropriate linear programming Problem.
(6 Marks)

QUESTION THREE (20 Marks)

a) What are examples of six project evaluation criteria?
(6 Marks)

b) What are the 5 principles of construction?
(2.5 Marks)

c) What Is Game Theory?
(2.5 Marks)

d) How is game theory used in real life?
(3.5 Marks)

e) Find the Nash equilibria of the following strategic game.
(5.5 Marks)

QUESTION FOUR (20 Marks)

(a) What is Bayes Theorem?
(4 Marks)

(b) Prove Bayes Theorem?
(2 Marks)

(c) There are two bags. Bag A has 7 red and 4 blue balls and B has 5 red and 9 blue balls. One ball is drawn at random and it turns out to be red. Determine the probability that the ball was from bag A by applying the

Bayes Theorem

(6 Marks)

(d) Suppose bag A contains 4 red and 5 black balls while bag B contains 6 red and 7 black balls. One ball is drawn at random from one of the bags and it is found to be red. Find the probability that it was drawn from bag B.

(8 Marks)

QUESTION FIVE (20 Marks)

a) List and define the five functions of Management.

(5 Marks)

b) Discuss Maslow's need theory with regard to employees.

(5 Marks)

c) (i) Define a project.

(2 Marks)

(ii) Discuss five characteristics of a project.

(5 Marks)

d) Briefly discuss 3 types of project monitoring.

(3 Marks)

END