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KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2019/2020 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF SCIENCE IN RENEWABLE
ENERGY AND BIOFUELS TECHNOLOGY

COURSE CODE: IET 481

COURSE TITLE: PROJECT MANAGEMENT FOR TECHNOLOGISTS

DURATION: 2 HOURS

DATE: 5/02/21

TIME: 11-1 Pm

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of 3 printed pages. Please Turn Over



KIBU observes ZERO tolerance to examination cheating

QUESTION 1 (30 marks)

- State the steps involved in Monte Carlo Simulation. (5 marks)
- State any five (5) desired features of project management software. (5 marks)
- Explain any five (5) steps involved in the process of establishing a project. (5 marks)
- State any three (2) examples of Statistical analysis and 3 examples of operational research. (5 marks)
- Compare and contrast CPM and PERT as used in project management. (5 marks)
- State any five (5) project financial appraisal methods. (5 marks)

QUESTION 2 (20 marks)

A project consists of five activities as shown in the PERT network Fig. 1. The three estimates of activity duration along with the associated probability and random numbers for the ten trials are given in the Table below. Simulate the duration of the project ten times and estimate the chances of various paths being critical. Also determine the average duration of the project.

Activity	Days	Prob.	Random numbers for the 10 trials									
			1	2	3	4	5	6	7	8	9	10
1-2	1	0.2	8	5	5	7	0	8	4	5	2	6
	4	0.5										
	8	0.3										
1-3	2	0.3	1	5	6	5	6	3	7	8	5	1
	4	0.5										
	7	0.2										
2-4	2	0.3	8	8	7	1	8	0	4	2	9	3
	4	0.3										
	6	0.4										
3-4	3	0.3	3	1	4	9	1	4	0	6	0	7
	6	0.4										
	8	0.3										
4-5	2	0.2	6	7	7	5	8	3	3	6	3	0
	3	0.2										
	4	0.6										

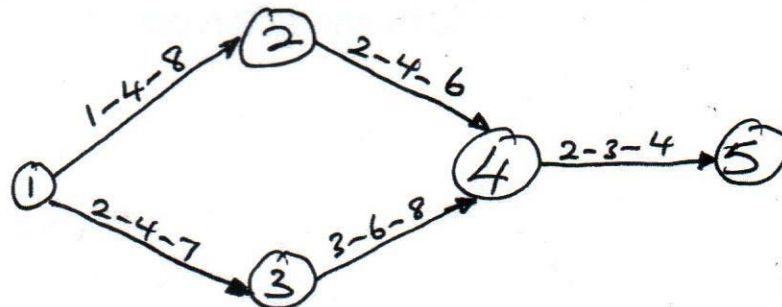


Fig. 1

QUESTION 3 (20 marks)

A project has eleven activities whose duration is given in the following table.

Activity	1-2	2-3	2-4	3-5	3-6	4-5	4-7	5-8	6-8	7-8	8-9
Duration (days)	2	8	10	6	3	3	7	5	2	8	3

- Draw the network
- Determine total, free and independent floats.
- Identify the critical activities, the critical path and project duration.

QUESTION 4 (20 marks)

- State any 5 advantages and 5 disadvantages of computer simulations in project management. (5 marks)
- Explain any five (5) stages of project management. (5 marks)
- State any five (5) project characteristics. (5 marks)
- State any five (5) characteristics of a good project manager. (5 marks)

QUESTION 5 (20 marks)

Solve the following Linear Programming problem using simplex method.

Maximize

$$z = 3x_1 + 2x_2 + 5x_3$$

Subject to

$$x_1 + 2x_2 + 3 \leq 430$$

$$3x_1 + 2x_3 \leq 460$$

$$x_1 + 4x_2 \leq 420$$

$$x_1, x_2, x_3 \geq 0$$