KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR

FOURTH YEAR SECOND SEMESTER
SPECIAL/SUPPLEMENTARY EXAMINATIONS

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

COURSE CODE: REN 424

COURSE TITLE: PROJECT MANAGEMENT FOR TECHNOLOGISTS

DURATION: 2 HOURS

DATE: 22/11/2022   **TIME: 8:00AM-10:00AM**

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

QUESTION 1 (30 marks)

a. Define the following terms:
   i. Project

   ii. Project Management (1 mark)

   iii. Stakeholder (1 mark)

   iv. Project income (1 mark)

   v. Working capital (1 mark)

b. Explain any five (5) project characteristics. (1 mark)

c. Explain any five (5) sources from which a new project ideas may emerge. (5 marks)

d. Explain any five (5) sources of project finance. (5 marks)

e. State any five (5) advantages of computer simulations in project management. (5 marks)

f. Describe the Monte Carlo Simulation and how it works. (5 marks).

QUESTION 2 (20 marks)

a. State any three (3) examples of Statistical analysis and 3 examples of operational research. (6 marks)

b. State any four (4) project financial appraisal methods. (4 marks)

c. Compare and contrast CPM and PERT as used in project management. (5 marks).

d. State the procedure of simplex method using computers. (5 marks)

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

a. Draw the network

b. Determine total, free and independent floats.

c. Identify the critical activities, the critical path and project duration.

QUESTION 4 (20 marks)

    a. Explain any five (5) sources of new project ideas.   (5 marks)

    b. Explain any five (5) aspects included in a detailed project proposal.   (5 marks)

    c. Explain the stages of project management.   (5 marks)

    d. Explain any five (5) characteristics of a good project manager.   (5 marks)

QUESTION 5 (20 marks)

A project consists of five activities as shown in the PERT network Fig. 2. The three estimates of activity duration along with the associated probability are given in the Table below. Using linear congruential method, generate 5 random numbers for each activity if $X_0 = 27$, $a = 17$, $c = 43$ and $m = 10$. Simulate the duration of the project five times and estimate the chances of various paths being critical. Also determine the average duration of the project.
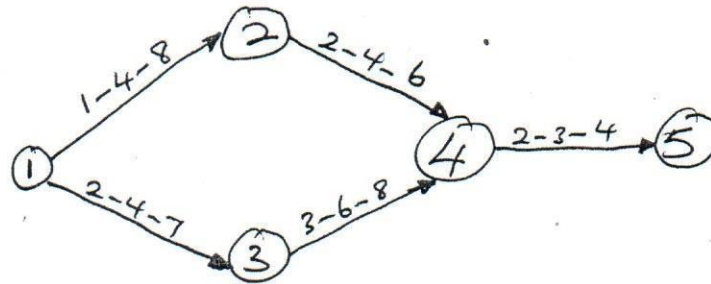

Fig. 2

Activity	Days	Prob.
1-2	1	0.2
	4	0.5
	8	0.3
1-3	2	0.3
	4	0.5
	7	0.2
2-4	2	0.3
	4	0.3
	6	0.4
3-4	3	0.3
	6	0.4
	8	0.3
4-5	2	0.2
	3	0.2
	4	0.6