



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

**UNIVERSITY EXAMINATION FOR THE DEGREE IN SCIENCE IN CONSTRUCTION
MANAGEMENT**

**3RD YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR
CENTRE: MAIN CAMPUS**

COURSE CODE: TCB 1303

COURSE TITLE: CONSTRUCTION PROJECT PLANNING AND CONTROL

EXAM VENUE:

STREAM: BSc. CONSTRUCTION MGT

DATE: 8 /1/2025

EXAM SESSION:14-16.00 PM

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) Explain the following terminologies or expressions associated with Project Planning and Control (10 Marks)
- Work breakdown structure
 - Dummy
 - Critical path
 - Backward pass
 - Management
- b) Explain the primary and secondary challenge of project management. (4 Marks).
- c) Explain what conceptual skills as a critical component of managerial skills entail and in which circumstances are they applied (3 Marks).
- d) Outline the checklist for setting up an operations research model (5 Marks).
- e) Briefly state the procurement factors that influence project success (4 Marks).
- f) Explain why it is necessary to apply models in providing solutions to challenges affecting real systems rather than just provide solutions in the context of actual real systems (4 Marks).

QUESTION TWO (20 Marks)

- a) Briefly state the difference between stochastic and deterministic models in operations research (4 Marks).
- b) The flow rate and residual time for an inventory model of a factory manufacturing plastic pipes are 100 pipes per 30 minutes and 2 hours respectively.
- With the aid of a diagram show the relationship between flow rate, residual time and inventory level (4 Marks)
 - Calculate the output from the inventory (4 Marks).
- c) Explain why it is ideal to employ a probability tree rather than a joint probability table to calculate joint probability (2 Marks).
- d) Below is a joint probability Table 1 showing the composition of cattle owned by a farmer segregated along sex and breed categories.

Sex	Local breed	Friesian breed	TOTAL
Bull	40	50	90
Cow	60	30	90
TOTAL	100	80	180

Table 1: Composition of Cattle Owned by a Farmer.

Using Table 1, calculate the probability that the first cattle selected is a bull, the second cattle selected is a bull and the third one is a bull. Note that those picked are not replaced (6 Marks).

QUESTION THREE (20 Marks)

Table 2 below shows a schedule of construction activities for a multi-storey building project in the City of Nairobi. In the Table the construction activities have been noted alphabetically from A to L. Activity predecessors have also been highlighted.

Activity	Duration	Predecessor
A	4	-
B	3	-
C	5	A
D	3	A
E	4	B
F	4	B
G	2	B, C
H	2	D
I	3	D, E, G
J	5	D, E, G
K	4	H, I
L	6	F, J

Table 2: Activities of a building project in the City of Nairobi

- Draw a schedule of the construction activities using Gantt Chart scheduling tool **(12 Marks)**.
- Show activity float on the Gantt Chart **(4 Marks)**
- Identify critical path **(4 Marks)**.

QUESTION FOUR (20 Marks)

Siaya County Government is intending to expand its infrastructure by putting up a ECD facilities. As the Project Manager for the project please respond to the following;

- Discuss the various project implementation stages with respect to the above project **(18 Marks)**.
- State four tools you would use to monitor progress of project implementation **(2 Marks)**

QUESTION FIVE (20 Marks)

You have been appointed a dam project for Bondo Sub-County.

- Explain to your client what the terminology “float” in project scheduling entails and why it is important **(2 Marks)**.
- Advice your client on comparative analysis of the Gantt Chart and Programme Evaluation & Review Technique (PERT) as scheduling tools based on their characteristics **(8 Marks)**.
- Explain to your client the purpose of scheduling project activities prior to work commencement **(10 Marks)**