(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR

FOURTH YEAR SEMESTER ONE EXAMINATIONS

FOR THE DEGREE
OF
BACHELOR OF SCIENCE IN CIVIL AND STRUCTURAL ENGINEERING, BACHELOR OF TECHNOLOGY IN BUILDING CONSTRUCTION AND BACHELOR OF TECHNOLOGY EDUCATION IN BUILDING AND CIVIL TECHNOLOGY

COURSE CODE: CSE 461/TEB 461

COURSE TITLE: CONSTRUCTION MANAGEMENT

DATE: 15ᵀᴴ DECEMBER 2023 **TIME: 8 A.M – 10 A.M**

INSTRUCTIONS:
1. This paper contains FOUR questions
2. QUESTION ONE IS COMPULSORY
3. Attempt any other Two questions
4. Marks for each question are indicated in the parenthesis.

Examination duration is **2 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 3 Printed Pages. Please Turn Over.

QUESTION 1 *(30 Marks)* **Compulsory question**

(a) Differentiate between Planning and Scheduling in project management. State at least FIVE benefits realized by each.   *(12 marks)*

(b) Outline the role of the following parties in a construction project: (i) Client (ii) Project Manager (iii) Site Agent (iv) Clerk of Works (v) General Foreman   *(10 marks)*

(c) A Motor Grader used for a road construction was priced at a cost of 25million Kenya shillings and the assessed resale value after 5 years is 20 percent of the delivery price. The machine is operated for an average of 2000 hours per year. Compute the hourly depreciation in shillings.
                                                                                (8 marks)

QUESTION 2 *(20 marks)*

(a) Describe what is meant by 'project risks'. Give examples of risks faced in construction projects.   *(10 marks)*

(b) (i) Describe the Critical Path Method in network analysis.

    (ii) A project consists of 8 activities. The expected time of completion of each activity and sequence of event is shown in the table below:

ACTIVITY	DESCRIPTION	DURATION (DAYS)	PREDECESSOR
A	Excavation	3	Nil
B	Build formwork	2	Nil
C	Procure reinforcement steel	2	Nil
D	Materials grading	2	A
E	Erect formwork	2	A, B
F	Set reinforcement steel	2	D, E, C
G	Place concrete	1	F
H	Remove formwork	2	G

Construct the network diagram and locate the critical path.   *(10 marks)*

QUESTION 3 *(20 marks)*

(a) Differentiate between the Surety bond and Performance bond in construction contracts.
                                                                                (4 marks)
(b) State and explain the main contract documents applied in Civil Engineering contracts.
                                                                                (8 marks)
(c) A bill of quantities for a certain construction site has the following bill item;

    " Excavate top soil and make level to reduced levels average thickness 150mm and remove away from site to a distance not exceeding 100m"

Compute the unit rate assuming the following:
- Capacity of scrapper   = $10m^3$
- Allowance of bulking   = 25%
- Round trip time for scrapper = 15minutes
- Cost of scrapper per hour   = Kshs.2,000/= (excluding fuel + operator)

Make any other suitable assumptions.

(8 marks)

QUESTION 4 *(20 marks)*

(a) Discuss FOUR tendering methods used for the execution of civil engineering projects.

(8 marks)

(b) What is stock taking? Explain the procedure involved in stock taking.

(4 marks)

(c) Define the following terms in respect to construction projects:
- (i)   Arbitration
- (ii)   Industrial relations
- (iii)   Collective bargaining agreement
- (iv)   Trade union

(8 marks)