



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF ENGINEERING AND TECHNOLOGY

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

**4TH YEAR 1ST SEMESTER 2024/2025 ACADEMIC YEAR
CENTRE: MAIN CAMPUS**

COURSE CODE: TCB 1405

COURSE TITLE: MAINTENANCE AND REHABILITATION

EXAM VENUE: STREAM: BSc. CONSTRUCTION MGT

DATE: 6/1/2024 EXAM SESSION:14-16.00 HRS

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 phrases commonly applied in the maintenance and rehabilitation of structures **(10 Marks)**
 - i. Nondestructive test
 - ii. Condition assessment
 - iii. Preventive maintenance
 - iv. Delamination
 - v. Maintenance policy
- b) Briefly highlight ten causes of maintenance defects **(5 Marks)**.
- c) Briefly explain seven (7) types of cracks associated with concrete **(7 Marks)**.
- d) Briefly highlight broadly the main components of a maintenance work scope by their relative weightings **(3 Marks)**.
- e) Briefly highlight the common services shared by several tenants or landlords for which there is need for payment of service charge **(5 Marks)**.

QUESTION TWO (20 MARKS)

You have been employed by the County Government of Siaya as a building maintenance manager. As an expert answer the following questions concerning maintenance of concrete structures:

- a) Explain what a “defect” entails in the maintenance fraternity **(2 Marks)**.
- b) Briefly explain the principles of strategic maintenance that you could incorporate to make the existing maintenance framework more proactive **(6 Marks)**.
- c) Briefly discuss how faulty design contribute to defects in concrete **(7 Marks)**.
- d) Explain the effect of excessive water in concrete mix on the maintenance of concrete structures **(5 Marks)**.

QUESTION THREE (20 MARKS)

Assuming you have been approached by a client to conduct a visual investigation of an existing building. As an expert advice your client on the following:

- a) Briefly highlight past records that form the basis of a visual inspection **(4 Marks)**.
- b) Explain what you would include in the scope of visual investigation **(8 Marks)**.
- c) Explain the importance of making references to the existing structural designs during visual investigation **(4 Marks)**.
- d) Explain what action a structural engineer needs to undertake should a visual investigation reveal signs of significant structural deterioration or defects **(4 Marks)**.

QUESTION FOUR (20 MARKS)

Building maintenance manual and building maintenance policy are tools applied to facilitate maintenance management. In your role as an expert in maintenance answer the following:

- a) Explain the difference between a building maintenance manual and building maintenance policy **(4 Marks)**
- b) Outline the ingredients of a building maintenance manual **(10 Marks)**
- c) Highlight six (6) objectives of a building maintenance policy **(6 Marks)**

QUESTION FIVE (20 MARKS)

Computer technology has revolutionized the efficiency and effectiveness within which maintenance operations are being undertaken more so with respect to preventive maintenance. As a contemporary maintenance expert answer the following:

- a) Outline preventive maintenance checklist with respect to the roof of a building **(5 Marks)**
- b) Briefly explain cyclic maintenance and how it is applied in the preparation of budgets for planned maintenance **(6 Marks)**
- c) Briefly highlight key benefits of computerized maintenance system **(5 Marks)**
- d) Briefly explain key aspects of maintenance where the computer can be readily applied **(4 Marks)**