



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF  
SCIENCE AND TECHNOLOGY  
(MMUST)**

**MAIN CAMPUS**

**UNIVERSITY EXAMINATIONS  
2022/2023 ACADEMIC YEAR**

**THIRD YEAR SECOND SEMESTER EXAMINATIONS**

**FOR THE DEGREE  
OF  
BACHELOR OF TECHNOLOGY IN BUILDING CONSTRUCTION**

**COURSE CODE: BTB 318**

**COURSE TITLE: CIVIL ENGINEERING CONSTRUCTION**

**DATE: 19<sup>TH</sup> APRIL 2023**

**TIME: 8 – 10 A.M**

**INSTRUCTIONS:**

1. This paper contains **two** sections
2. Answer **all** questions in **section I** and **any two** from section **II**
3. Marks for each question are indicated in the parenthesis.
4. Examination duration is **2 Hours**

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 2 Printed Pages. Please Turn Over.

**SECTION I: ANSWER ALL QUESTIONS (30 MARKS)**

1. (a) Differentiate between tack, prime and seal coats in a pavement structure **(6 marks)**  
(b) What are the functions of a surfacing course layer in flexible pavements **(3 marks)**  
(c) Differentiate between jointed plain concrete pavements and jointed reinforced concrete pavements **(6 marks)**
2. (a) Flexible pavements have four main layers. Describe the process of construction for sub-grade and sub-base layers. In each case mention some of the materials commonly used for their construction in Kenya. **(9 marks)**  
(b) What are tunnels. **(2 marks)**  
(c) What are some of the key factors you will consider when choosing a method to use in carrying out tunneling operations. Mention any four **(4 marks)**

**SECTION II: ANSWER ANY TWO QUESTIONS (40 MARKS)**

3. (a) The county government of Kakamega is concerned about the safety of workers in the construction sector. In this regard you have been appointed to lead a team to assess the safety levels on some selected sites in the county. Describe some of the issues you will look at in this assessment. **(14 marks)**  
(b) In the process of rail track construction, you encounter poor soil and decide to use of two methods to stabilize the soil. The two are: cement grouting and sand piles. Describe the two methods. **(6 marks)**
4. (a) Briefly describe the function of the following components of a railway track. **(12 marks)**
  - Rails
  - Fastening systems
  - Cross ties
  - Ballast  
(b) There is a major issue of concern in construction of retaining walls. Mention the issue and describe how it is handled in the construction process. **(5 marks)**  
(c) What is the difference between flexible and rigid pavements, differentiate in terms of mode of load transfer **(3 marks)**
5. (a) There are two main types of joints used in retaining walls, especially when the construction material is concrete. Briefly discuss the two types of joints. **(4 marks)**  
(b) Briefly outline the process of underground water tank construction **(5 marks)**  
(c) Outline any five disadvantages of underground water storage tanks. **(5 marks)**  
(d) Briefly describe the core elements of a construction site safety program. **(6 marks)**