



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

ECV 2301: CIVIL ENGINEERING CONSTRUCTION II

END OF SEMESTER EXAMINATION

SERIES: SEPT 2017

TIME: 2 HOURS

### INSTRUCTIONS TO CANDIDATES

You should have the following for this examination

- Answer booklet
- Drawing instruments

This paper consists of **FIVE** questions

Answer any other **THREE** questions

Use neat, large and well labelled diagrams where required

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed papers.

### QUESTION ONE

- A pavement is a structure whose primary function is to distribute the applied vehicle loads to the subgrade. Briefly explain any **FIVE** factors that must be taken into account when designing any pavement. **(10 marks)**
- State the **TWO** types of pavements and give **FOUR** points in which the two differ from one another. **(10 marks)**

### QUESTION TWO

- (a) Highlight SIX ways in which concrete sleepers used in railway construction may be maintained as part of the railway maintenance operations. **(6 marks)**
- (b) Using SIX items of comparison differentiate between a mono-block and two-block concrete sleepers used in railway construction. **(6 marks)**
- (c) Ballast has been used intensively in railway construction, highlight EIGHT functions of ballast when packed below and around the sleepers. **(8 marks)**

### **QUESTION THREE**

- (a) .
- i) Define the term “culvert “as used in the civil engineering construction. **(2marks)**
- ii) Using well labeled sketches show and list the FIVE commonly used types of culverts indicating the material used to make such a culvert **(10 marks)**
- (b) Differentiate between headwalls and end walls **(2 marks)**
- (c) Using suitable sketches show the various types of headwalls and end walls  
(6marks)

### **QUESTION FOUR**

- (a) Using well labeled sketches describe the construction of the following water front structures
- i. sea walls
  - ii. Breakwaters
  - iii. Caissons
  - iv. Docks **(16 marks)**
- (b) Highlight FOUR uses of culverts as used in civil engineering constructions **(4 marks)**

### **QUESTION FIVE**

- (a) List FIVE advantages of tunneling **(5 marks)**
- (b) Using well drawn sketches, describe the THREE types of bridges commonly used in civil engineering constructions **(9 marks)**
- (c) Briefly explain any THREE design factors that are considered before any tunneling operation is carried out **(6 marks)**