



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

THIRD YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCE CD306: CREATIVE ENGINEERING I

DATE: 5/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

- *This paper comprises five questions*
- *Question **one** is **compulsory** and carries 30 marks*
- *All other questions carry 20 marks each*
- *Answer question **one** and any other **two** questions*

QUESTION ONE (30 MARKS)

- Give FIVE factors that a structural engineer record addresses (10 marks)
- State and explain FIVE types of innovation (10 marks)
- Define the following terms:
 - Innovation
 - Creativity
 - Invention
 - Innovation as an abstract concept
 - Structural Engineer (10 marks)

QUESTION TWO (20 MARKS)

- Give TEN scopes of services that may be provided by a structural engineer (10 marks)
- Give and explain FIVE characteristics of a structural scope of investigation (10 marks)

QUESTION THREE (20 MARKS)

- a) Discuss FIVE different classifications of roads (10 marks)
- b) State and explain FIVE characteristics of an ideal pavement (10 marks)

QUESTION FOUR (20 MARKS)

- a) Give Ten importance of highway drainage (10 marks)
- b) Give TEN factors to consider in reviewing bids for a highway project (10 marks)

QUESTION FIVE (20 MARKS)

- a) What are unit rates (2 marks)
- b) State SIX basic inclusions in unit rates (6 marks)
- c) Provide and explain SIX importance of highway drainage (12 marks)