



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 CIBIL
ENGINEERING**

BCE CD 306: CREATIVE ENGINEERING I

DATE: 28/7/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

This paper comprises of five questions

Question one is compulsory and carry 30 marks

All other questions carry 20 marks

Answer question one and any other two questions

1. (a) Define the following terms
 - (i) Creativity
 - (ii) Innovativeness
 - (iii) Brain storming
 - (iv) Initiative
 - (v) Inquisitiveness (10 marks)
- (b) Briefly describe five components of a building. (10 marks)
- (c) With the aid of a well labelled sketch show the components of a city road
 - (i) Carriage way
 - (iv) Kerb

- (ii) Right of way
 - (iii) Crown
 - (v) Drain
 - (10 marks)
2.
 - (a) Briefly describe five traits of creativity and innovativeness. (10 marks)
 - (b) Draw a dimension paper and explain what each column stands for (10 marks)
 3.
 - (a) Briefly explain how you can build up unit rates for concrete works (5 marks)
 - (b) State five reasons for bills of quantities. (5 marks)
 - (c) Briefly explain how you can apply civil engineering knowledge and skills to develop a civil engineering idea that could create employment for about twenty youths in your county (10 marks)
 4.
 - (a) Briefly describe the following components of a road surface
 - (i) Sub-grade
 - (iii) Base
 - (ii) Sub-base
 - (iv) Wearing course
 - (b) With the aid of a sketch describe a rigid pavement (4 marks)
 - (c) Briefly explain four factors that influence the design elements of a highway. (8 marks)
 5.
 - (a) Briefly describe the following categories of traffic signs and give two examples in each case
 - (i) Regulatory or mandatory signs (4 marks)
 - (ii) Warning or cautionary signs (4 marks)
 - (b) State five purposes of the traffic signals (5 marks)
 - (c) Briefly explain the importance of highway drainage (3 marks)
 - (d) Briefly explain why as engineer should be creative and innovative (4 marks)