



MACHAKOS UNIVERSITY

University Examination 2019/2020

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
THIRD YEAR FIRST SEMESTER EXAMINATION FOR
DIPLOMA IN CIVIL ENGINEERING
BCECD 309: CIVIL ENGINEERING CONSTRUCTION II

DATE: 11/12/2019

TIME: 8.30-10.30 AM

INSTRUCTIONS

This paper comprises five questions

Answer question ONE (compulsory) and any other TWO questions.

QUESTION ONE (30 MARKS)

- a) Briefly explain the following terms used in road construction;
 - i. soil sub grade
 - ii. sub base
 - iii. base course
 - iv. wearing course (12 marks)
- b) With the aid of a diagram, explain the operation of a slow sand filter (8 marks)
- c) Define the term tunnel and state four advantages of tunnelling (6 marks)
- d) Describe the following terms;
 - i. effluent
 - ii. influent (4 marks)

QUESTION TWO (20 MARKS)

- a) Sketch and label a section through a flush causeway (3 marks)
- b) State seven points attended to in respect of maintenance of causeways (7 marks)
- c) Explain three factors upon which selection of type of seawall to be built depend (6 marks)

QUESTION THREE (20 MARKS)

- a) Mention five classes of water impurities citing an example in each case. (7 marks)
- b) By use of neat sketches; explain the water treatment process (10 marks)
- c) State three main differences between a culvert and a bridge. (3 marks)

QUESTION FOUR (20 MARKS)

- a) Explain four factors to be considered when selecting a site for a dam (8 marks)
- b) Explain the process of sewage treatment in a sewage treatment plant (12 marks)

QUESTION FIVE (20 MARKS)

- a) Define the term dredging hence briefly explain the following dredging processes;
 - i. pre-treatment
 - ii. extraction
 - iii. transportation
 - iv. deposition (12 marks)
- b) Sketch and label a section of a cast iron pot sleeper (5 marks)
- c) List down three functions of a railway sleeper (3 marks)