



MACHAKOS UNIVERSITY

University Examinations for 2020/2021 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIFTH YEAR SPECIAL/ SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECV 522: DESIGN AND CONSTRUCTION OF DAMS

DATE: 24/3/2021

TIME: 8.30-10.30 AM

INSTRUCTIONS

- This paper comprises of five questions. Answer **three** questions
- Question one is **compulsory** and carry 30 marks
- Answer any other **two** questions

QUESTION ONE (30 MARKS)

- a) Briefly discuss THREE dam subsurface exploratory methods (15 marks)
- b) A masonry dam of trapezoidal section is 10m high. It has top width of 1m and bottom width of 6m. The face exposed to water has slope of 1 horizontal to 10 vertical. Calculate the maximum and minimum stresses on the base when the water level coincides with the top of the dam. Take weight density of masonry as 22.563 kN/m^3 . (15 marks)

QUESTION TWO (20 MARKS)

Discuss the factors to be considered in selection of dam sites

QUESTION THREE (20 MARKS)

A trapezoidal masonry dam having 4m top width, 8m bottom width and 12m high, is retaining water up to a height of 10m. The density of masonry is 2000 kg/m^3 and coefficient of friction between the

dam and soil is 0.55. The allowable compression stress is 343,350N/m². Check the stability of the dam

QUESTION FOUR (20 MARKS)

Instrumentation and proper monitoring and evaluation are extremely valuable in determining the performance of a dam. You have been asked to make a short presentation to a committee of stakeholders who are writing a proposal for funding of the above-mentioned subject for a dam in your locality. As an expert, discuss **TEN** features of the dam to be monitored.

QUESTION FIVE (20 MARKS)

- a) Discuss the corrections carried out in standard penetration test (10 marks)
- b) Briefly discuss FIVE types of dams (10 marks)