



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN BUILDING AND CIVIL ENGINEERING

ECV 2102 : CIVIL ENGINEERING MATERIALS II

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2019

TIME: 2 HOURS

DATE: Pick Date August 2019

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt any **THREE** questions.

Do not write on the question paper.

Question One

- 1(a). Briefly explain the materials used for making concrete **(4 marks)**
- (b). Briefly explain the advantages of mechanical compaction of concrete **(4 marks)**
- (c) Explain the two methods of batching concrete **(6 marks)**
- (d). Outline general principles observed in using concrete mixers **(6 marks)**

Question Two

2(a) with aid of sketch explain the following concrete mixers

- i. Tilting drum mixer
- ii. Pan type concrete mixer **(8 marks)**

(b) Outline the factors to consider when choosing a mixer **(3 marks)**

(b) Discuss the properties of concrete in the wet state (9 marks)

Question Three

3(a). Write short notes on the following concreting procedures

- i. Transporting concrete
- ii. Placing concrete (6 marks)

(b) Briefly describe THREE methods of curing concrete in hot weather conditions (6 marks)

(c.) Briefly explain the Quality control measures undertaken before concreting (8 marks)

Question Four

4(a). Explain why concrete cover is provided in reinforced works (2 marks)

(b). Outline the FOUR types of concrete broadly used in construction (4 marks)

(c). Explain using sketches, the TWO systems of pre stressed concrete (6 marks)

(d). Outline EIGHT functional requirements of a good formwork (8 marks)

Question Five

5(a). Briefly describe the slump test done on fresh concrete (6 marks)

(b). Briefly describe concrete reinforcement under the following sub – headings

i.Reasons for use in Beams and Columns

ii.Types of reinforcement (6 marks)

(c). Calculate the quantity of each material to order for a 1:3:6 , 40 mm aggregate concrete mix to produce 1m^3 of concrete if site wastage is; 3% on cement, 5% on sand and 10% on course aggregate. Given the weight of materials per m^3 is 1440 kg for cement,1500 kg for sand and1600 kg for course aggregates (8 marks)