



TECHNICAL UNIVERSITY OF MOMBASA

FACULTY OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING & CIVIL ENGINEERING
UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN CIVIL ENGINEERING

TCV 4211 : CONSTRUCTION TECHNOLOGY I
SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: SEPTEMBER 2018

TIME: 2 HOURS

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 question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (COMPULSORY) (20 Marks)

- (a) Safety signs and symbols are mandatory in any construction project. Give the colour code used for each of the following signs: (6 Marks)
- (i) Prohibitive signs
 - (ii) Mandatory signs
 - (iii) Safe condition signs
 - (iv) Hazard signs
 - (v) Fire signs
 - (vi) Information signs
- (b) List any FOUR activities involved in clearing a site. (4 Marks)
- (c) State how the following materials should be stored on a construction site: (6 Marks)
- (i) Cement
 - (ii) Aggregates
 - (iii) Bricks and blocks
 - (iv) Facing bricks and light coloured bricks
 - (v) Timber
 - (vi) Ironmongery
- d) Differentiate between demolition and taking down of a building. (2 Marks)
- e) Discuss any FOUR methods of demolition. (12 Marks)

ATTEMPT ANY TWO QUESTIONS

QUESTION TWO (20 Marks)

- a) When planning site layouts, efficiency must be taken into consideration. Discuss.(5 Marks)
- b) Discuss the 3-4-5 method of setting out (5 Marks)
- c) Differentiate between three methods which may be used in basement excavations. (6 Marks)
- d) Sketch and label the vertical sheeting method of timbering. (4 Marks)

QUESTION THREE (20 Marks)

- a) Define the term timbering and give its importance. (3Marks)
- b) By use of sketches differentiate between the TWO types of pipes that may be used in sub-soil drainage. (4 Marks)
- c) By use of sketches, differentiate between any THREE drainage layouts. (6 Marks)
- d) What is the importance of sub-soil drainage? (2 Marks)
- e) List any five methods of permanent exclusion of ground water. (5 Marks)

QUESTION FOUR (20 Marks)

- a) Give any TWO causes of settlement of buildings. (2 Marks)
- b) Which TWO factors determine the choice of foundations for a given structure? (2 Marks)
- c) Differentiate between the following types of raft foundation with the aid of sketches. (6 Marks)
 - i) Solid slab raft
 - ii) Cellular rafts
- d) What is soil investigation and which two methods are used to conduct soil investigation? (4 Marks)
- e) Give any THREE factors must be taken into consideration when calculating the pressure exerted at any point on the retaining wall? (3 Marks)
- f) How does ground water behind a retaining wall affect its design and stability? (3 Marks)

QUESTION FIVE (20 Marks)

- a) Differentiate between active and passive earth pressures. (4 Marks)
- b) With the aid of sketches, differentiate between the following types of retaining walls: (6 Marks)
 - (i) Cantilever retaining wall
 - (ii) Counterfort retaining wall
- c) What is a pile foundation and how are they classified? (3 Marks)
- d) Differentiate between the following types of piles: (3 Marks)
 - (i) End bearing piles
 - (ii) Friction piles
 - (iii) Displacement piles
- e) List FOUR types of hammers used to drive displacement piles. (4 marks)