



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

**(A Constituent College of JKUAT)**

(A Centre of Excellence)

# **Faculty of Engineering & Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING**

EBC 1113: CONSTRUCTION MATERIALS IV

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**SERIES: OCTOBER 2012**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions. Answer question any **THREE** questions  
Maximum marks for each part of a question are as shown  
This paper consists of **THREE** printed pages

**Question One (20 Marks)**

- a) State **FOUR** requirements to be observed while transporting concrete. **(4 marks)**
- b) Outline the following modes of transporting concrete and each case state their limitations  
i) Wheelbarrows  
ii) Dumpers  
iii) Tipper trucks  
iv) Ready-mix concrete trucks  
v) Skips and buckets  
vi) Pumping **(12 marks)**
- c) Distinguish between fresh and hardened concrete. **(4 marks)**

**Question Two (20 Marks)**

- a) Outline the following concrete mixes stating the limitations in use.  
i) Nominal mixes  
ii) Prescribed mixes  
iii) Design mixes **(6 marks)**
- b) Determine the material requirement to produce 100cm<sup>3</sup> of concrete mix 1:2:4 if concrete yields by 25%.  
- Density of sand = 1600 kg/m<sup>3</sup>  
- Density of ballast = 1400 kg/m<sup>3</sup>  
- Density of cement = 1400 kg/m<sup>3</sup>  
- Water/cement ratio = 0.6 **(14 marks)**

**Question Three (20 Marks)**

- a) Outline the mode of operation of the following types of concrete mixers.  
i) Tilting drum  
ii) Non-tilting drum  
iii) Peversing  
iv) Pan **(12 marks)**
- b) Define the following:  
i) Mixing time of mixers  
ii) Mixing cycle of mixers  
iii) Output of mixers. **(8 marks)**

**Question Four (20 marks)**

- a) State **THREE** purposes of formwork. **(6 marks)**
- b) State **SIX** functional requirements of formwork. **(12 marks)**

c) State minimum striking periods of the following forms:

- i) Vertical formwork to columns, walls.
- ii) Props to slab soffits
- iii) Props to beam soffits

**(2 marks)**

**Question Five (20 marks)**

a) Describe the method of carrying out the following concreting operations:

- (i) Under-water concreting
- (ii) Concreting in deep lifts
- (ii) Concreting on sloping structures.

**(15 marks)**

b) Outline the following surface finishes.

- i) Board marked surfaces
- ii) Terrazzo finishes
- iii) Granolithic finishes

**(5 marks)**

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