



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 100cm³ of concrete mix 1:2:4 if concrete yields by 25%.
- Density of sand = 1600 kg/m³
- Density of ballast = 1400 kg/m³
- Density of cement = 1400 kg/m³
- 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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