



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING (DBC 09A)

EBC 2323: BUILDING TECHNOLOGY IV

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2011

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer booklet*

This paper consists of **FIVE** questions

Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**

Maximum marks for each part of a question are clearly shown

This paper consists of **THREE** printed pages

SECTION A (COMPULSORY)

Question 1

- a) Define the following terms:
- (i) Thermal conductivity
 - (ii) Thermal resistivity
 - (iii) Thermal resistance
 - (iv) Surface resistance
 - (v) Thermal transmittance
- (15 marks)
- b) A wooden door measuring 2.0 x 0.8m and 400mm thick has an inside surface temperature of 13°C and outside surface temperature of 9°C. If the thermal conductivity of the wood is 0.14W/m°C. Calculate:
- (i) The rate of heat flow through the door
 - (ii) Quantity of heat lost through the door in one hour
- (4 marks)
- c) Calculate the total resistance of the block wall given the following information:-
- Plaster thickness 20mm
 - Wall thickness 225mm
 - Rendering thickness 15mm
 - Thermal conductivities
- | | | |
|-----------|---|-----------|
| Plaster | - | 0.40W/m°C |
| Block | - | 1.20W/m°C |
| Rendering | - | 0.53W/m°C |
- (5 marks)
- d) Explain the following terms used in sound insulation
- (i) Reverberation time
 - (ii) Decibel
 - (iii) Sound absorption
- (6 marks)

SECTION B (Answer any TWO questions from this section)

Question 2

- a) Sketch and label the following forms of insulation
- (i) Roofs (sheet covering)
 - (ii) Insulating outside solid wall
- (10 marks)
- b) Explain the two modes of sound transmission
- (4 marks)
- c) Explain **FOUR** ways of controlling noise along the path of sound
- (6 marks)

Question 3

- a) Sketch and label a section of the following sound insulating floors
- (i) Timber floating floor
 - (ii) Floating screed
- (8 marks)

- b) Define the following terminologies used in fire protection
- (i) Fire load
 - (ii) Fire precaution
 - (iii) Fire prevention
 - (iv) Fire protection
 - (v) Fire resistance
 - (vi) Fire stop
- (12 marks)

Question 4

- a) State the **THREE** reasons for fire protection to building elements (3 marks)
- b) Sketch and label one hour fire resistant for the following structural elements:
- (i) Solid protection to steel beam
 - (ii) Reinforced column
 - (iii) Reinforced beam
 - (iv) Fire resistant timber floor
- (13 marks)
- c) State **FOUR** aims of building maintenance (4 marks)

Question 5

- a) With the aid of sketch, describe the construction of a foot-path with grass verge paving slabs on mortar dots (12 marks)
- b) With the aid of a sketch, describe the use of hose-reel (8 marks)