



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2014/2015

**SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING**

**FIRST SEMESTER EXAMINATION FOR DIPLOMA IN BUILDING TECHNOLOGY
MODULE II**

2705/205: BUILDING CONSTRUCTION II AND DRAWING II

Date: 19/03/2015

Time: 08:30 - 11:30 am

Instructions:

- *You should have the following for this examination*
 - *Answer booklet*
 - *Drawing paper A2*
 - *Drawing instruments*
 - *Calculator*
- *This paper comprises of **Eight** questions in **Two** sections **A** and **B***
- *Answer **Five** questions taking **at least Two** questions from each section. All questions carry equal marks*

SECTION A: BUILDING CONSTRUCTION II

*Answer at least **TWO** questions from this section.*

- 1 a) Outline Five functional requirements of a roof (10 marks)
b) Briefly state and explain Five functions of a roof (10 marks)
2. Sketch the following types of roofs giving the maximum spans
 - i. Lean – to roof
 - ii. Couple roof
 - iii. Closed couple roof
 - iv. Collar roof

- v. Queen post truss (20 marks)
3. a) With an aid of a suitable sketch differentiate between clear and effective spans (4 marks)
- b) Make neat sketches of the following types of eaves
- i. Flush
 - ii. Open
 - iii. Sprocket
 - iv. Closed (12 marks)
- c) Differentiate between a single and a double roof (4 marks)
4. Briefly explain the following terms as related to roofs
- i. Eaves
 - ii. Fall
 - iii. Fascia board
 - iv. Hip
 - v. Rafter
 - vi. Pitch
 - vii. Purlin
 - viii. Ridge board
 - ix. Soffit
 - x. Wall plate (20 marks)

SECTION B: DRAWING II

Answer at least TWO questions from this section.

- 5 a) State Four statutory bodies which oversee the use of building regulations in Kenya (4 marks)
- b) Outline four parties involved in design of a building project in Kenya (6 marks)
- c) i) Outline two purposes of specifications to each of the following parties in a building project;
- Contractor
 - Quantity surveyor
- ii) Briefly describe Two types of specifications applied to a building project (10 marks)
- 6 a) Giving two relevant examples in each case, describe four categories of buildings (4 marks)
- b) State four personnel whose consent, opinions and recommendations must be sought on the Building plan approval form before it is forwarded to the County Secretary for final approval. (4 marks)

c) Briefly explain six minimum requirements in each case that the client must facilitate before submission of drawings for approval by the Ministry of Transport, Roads and Public works for the following proposed building types;

- i. Single storied buildings
- ii. Storied buildings

(12 marks)

7 To a scale of 1:20, draw a longitudinal section and cross-section of a cantilever beam projecting 2.0 meters from the support given the following information:-

DATA

- Clear span = 2000 mm
- Overall depth at fixed end = 580 mm
- Overall depth at free end = 260 mm
- Width of cantilever beam = 300 mm
- Width of R. C. Column = 400 mm
- Main reinforcement bars – 5 No. Y18 with three bars curtailed at 1.5 m from support
- Anchor bars – 2 No. Y10
- Nominal stirrups Y6 @300 c/c
- Bearing at fixed end = 300 mm

Assume any other relevant information not given

(20 marks)

8 The figure below shows the plan of a square column of side 400 mm. to a scale of 1:20, draw the plan and vertical section of the column from the following information:-

DATA

- Height of column above ground level = 3500 mm
- Depth below ground level = 1100 mm
- Longitudinal reinforcement = 4 No. Y25
- Lateral ties = Y8 @200 c/c
- Footing size = 1200 mm x 1200 mm
- Thickness of footing at free end = 150 mm
- Thickness of footing at column face = 300 mm
- Reinforcement in base Y12 @150 c/c both direction

Assume any other relevant information not given

(20 marks)

