



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCECD 109: ENGINEERING DRAWING I

Date: 25/4/2016

Time: 8:30 – 10:30 AM

Instructions:

- *This paper comprises of **five** questions*
- *Question **one** is **compulsory** and carry 30 marks*
- *Answer any **other two** questions*

- Draw a rectangle ABCD and divide it into three parts in the proportions 1:3; 4, using the Geometrical method.
Data: $AB = CD = 25 \text{ mm}$
 $BC = AD = 90 \text{ mm}$ (6 marks)
 - Construct a regular hexagon given the length of one side as 50mm. (8 marks)
 - Fig I show the cross-section of a wooden handrail. Copy the drawing showing clearly the Construction of the angles using a compass. (8 marks)
 - An end view is given, fig 2 , of a metal wall mounted roll holder for kitchen paper. Copy the drawing and , by construction , show the largest diameter of roll which can be placed in the holder touching both sides and the base. (8 marks)
- Draw the following types of lines.
 - dimension line
 - centerline
 - hidden detail line
 - break line(8 marks)

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- (b) The major and minor axes of an ellipse are given as 130 and 80mm respectively. Construct the ellipse using the concentric circles method. (12 marks)
3. (a) Fig 3 shows an interlaced pattern made up of squares. Copy the pattern making the Circumscribing circle 114mm. (10 marks)
- (b) Print the text below in lower case letters
“In drawing circles and arcs the positions of the centres should be established first and the principal axis, the horizontal and vertical lines passing through the centres are drawn”. (10 marks)
4. (a) Construct a kite ABCD given the diagonals, $BD = 90$ & $AC = 50$. The diagonals intersect at a point 65mm from B. (5 marks)
- (b) In figure 4, A and O are fixed points and AB and BC are two links which are pivoted at B. The point D is attached to a crank pin which moves on the pitch circles as indicated. Draw the locus of C for one complete revolution of the crank pin. (15 marks)
5. (a) Construct a regular octagon in a square of side 60mm. (10marks)
- (b) Draw a circle of radius 30mm and show the following parts.
- Arc
- Segment
- Chord
- Sector
- Tangent (10 marks)



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DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING CONSTRUCTION
TECHNOLOGY

BCEBT207: BUILDING TECHNOLOGY III

Date: 25/4/2016

Time: 8:30 – 10:30 AM

INSTRUCTIONS:

- This paper comprises of **five** questions
- Question **one** is **compulsory** and carry 30 marks
- Answer any **other two** questions

- (a) (i) Identify four functions of a wall. (4 marks)
 - (ii) Describe the four forms of wall construction. (8 marks)
 - (iii) Explain any five functional requirements of walls. (10 marks)
 - (b) (i) Define the term “centre “as used in construction of arches. (2 marks)
 - (ii) State four classifications of arches giving one example in each class. (6 marks)
- (a) With the aid of neat sketches, show two methods of fixing a wall plate. (8 marks)
 - (b) Sketch and label a section through a cavity wall from the foundation to the wall plate. (12 marks)
- (a) Differentiate the terms jointing and pointing as used in wall finishing. (3 marks)
 - (b) Sketch, neatly, any four types of cramps used in cavity walls. (8 marks)
 - (c) With the aid of neat labeled sketches, explain three types of bonds used in wall construction. (9 marks)

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4. (a) Identify four types of rubble walls. (4 marks)
- (b) Differentiate between the following terms
- Lintel and beam
- plastering and rendering (4 marks)
- (c) Sketch a vertical section through a chimney showing the construction details. (12 marks)
5. (a) Name four common types of copings. (4 marks)
- (b) State three conditions which can prevent the chimney from operating satisfactorily. (6 marks)
- (c) With the aid of a sketch illustrate 10 parts of an arch. (10 marks)



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DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING
CONSTRUCTION TECHNOLOGY

BCEBT114: ENTREPRENEURSHIP II

Date: 20/4/2016

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

- *This paper comprises of **five** questions*
 - *Question **one** is **compulsory** and carry 30 marks*
 - *Answer any **other two** questions*
1. (a) (i) Briefly explain four characteristics of a good business opportunity. (8 marks)
(ii) Define the following terms,
 - Business idea, (4 marks)
 - Business opportunity.
 - (b) (i) what is a business market? (2 marks)
(ii) Enumerate two basic reasons which motivate customers to buy products /services, giving two examples in each case. (6 marks)
 - (c) (i) State four methods of collecting information. (4 marks)
(ii) Explain three steps undertaken in market research. (6marks)
2. (a) Identify any four factors to be considered when selecting sources of business finance. (4 marks)
 - (b) State three advantages and three disadvantages of borrowing from lending Institutions.(6 marks)
 - (c) Explain the five “Ws “of marketing. (10 marks)
3. (a) State five sources of information on customers behavior. (5 marks)
 - (b) Outline any three components of the building by laws. (6 marks)
 - (c) Explain three forms of business ownership giving two advantages and two disadvantages (9 marks)

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4. (a) State five incentives offered by the government to aspiring entrepreneurs. (5 marks)
(b) Identify four types of information that a person who is about to start a business would require, giving two sources of each type of information. (6 marks)
(c) Explain three indicators that can guide an entrepreneur in identifying a business opportunity. (9 marks)
5. (a) Identify three sources of equity financing. (3 marks)
(b) Define the term technology . (3 marks)
(c) Name and explain three classes of technology. (6 marks)
(d) Outline four factors to consider when choosing the type of technology to use . (8 marks)



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SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING
CONSTRUCTION TECHNOLOGY

BCEBT116: BUILDING TECHNOLOGY II

Date: 25/4/2016

Time: 8:30 – 10:30 AM

Instructions:

- This paper comprises of **five** questions
 - Question **one** is **compulsory** and carry 30 marks
 - Answer any **other two** questions
1. (a) (i) Define the following terms,
- plastering
 - crazing. (4 marks)
- (ii) Explain the three steps which would ensure good bonding when rendering. (6 marks)
- (b) (i) State four functions of walls. (2 marks)
- (ii) Explain the purpose of the following features as used in walls,
- buttress
 - cappings. (4 marks)
- (c) With aid of a neat sketch, illustrate how a wooden door frame is fixed to a masonry wall. (6 marks)
- (d) Sketch and label a section through a solid ground floor. (8 marks)

2. (a) With the aid of a neat sketch show the details of an internal load bearing wall at the ground floor. (6 marks)
- (b) Explain the three functions which guide the choice of floor finish . (6 marks)
- (c) Explain four common defects in film paint. (8 marks)
3. (a) Identify four types of reinforcement used in brickwork. (4 marks)
- (b) (i) Explain the difference between pointing and jointing. (4 marks)
- (ii) State any four types of finishes applied to brick work joints. (4 marks)
- (c) With the aid of neat sketch illustrate the jamb treatment detail in a bonded jamb. (8 marks)
4. (a) (i) State three functions of plaster. (3 marks)
- (ii) Enumerate three disadvantages of lime plasters compared to gypsum plasters. (3 marks)
- (iii) With the aid of a neat sketch, illustrate the detail of an unbounded floor screed. (4 marks)
- (b) With the aid of neat sketches, show the layout of first and second course in ,
- (i) – acute angle in Flemish bond,
- (ii)- Obtuse angle in English bond. (10 marks)
5. (a) (i) Explain the following term as used in walls ,
- capping,
- cramps. (4 marks)
- (ii) Illustrate with neat sketches four types of copings. (8 marks)
- (b) (i) Explain the functions of a damp proof membrane. (2 marks)
- (ii) Identify four properties of materials which are suitable for use as **dpc**. (4 marks)
- (iii) Define the term foundation. (2 marks)



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DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING
CONSTRUCTION TECHNOLOGY

BCEBT210: GENERAL BUILDING CONSTRUCTION II

Date: 18/4/2016

Time: 8:30 – 10:30 AM

INSTRUCTIONS:

- This paper comprises of **five** questions
- Question **one** is **compulsory** and carry 30 marks
- Answer any **other two** questions

1. (a) (i) Identify three systems of drainage below ground. (3 marks)
(ii) Explain the positions and use of the following drainage fittings,
 - Rain water shoe,
 - Back inlet gulley,
 - Trapless yard gulley . (6 marks)
 - (b) (i) Identify three materials used for scaffolds. (3 marks)
(ii) Illustrating with a neat sketch the putlog scaffold. (8 marks)
 - (c) With the aid of a neat sketch, illustrate the indirect cold water system for a one storey building. (10marks)
2. (a) sketch and label a section through a filled soak away pit. (8 marks)
(b) With the aid of a labeled sketch, illustrate the layout of pipes and components from the water main to the point of entry into the building. (12 marks)

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3. (a) (i) State six properties of a good heat insulating material . (6 marks)
(ii) Identify four heat insulating materials. (2 marks)
(b) Enumerate four reasons why saw dust is not suitable as a heat insulating material. (4 marks)
(c) With the aid of a neat sketch, show the details of a constructional hearth. (8 marks)
4. (a) (i) identify three modes of heat transfer. (3 marks)
(ii) Explain where each of the three modes is applied in the process of heating water in a building. (6 marks)
(b) With the aid of a neat labeled sketch, illustrate the single flying shore system (11 marks)
5. (a) Explain the following term,
- structure borne sound,
- airborne sound. (4 marks)
(b) State three principle requirements of a fire place. (6 marks)
(c) With the aid of a labeled sketch, illustrate the indirect system of hot water. (10 marks)