



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

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN BUILDING TECHNOLOGY

BCECD 110: ECONOMICS FOR ENGINEERS

Date: 4/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

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

QUESTION 1 (COMPULSORY) - 30 MARKS

- a) i) Distinguish between wealth and income (2 marks)
- ii) Briefly discuss stages involved in the development of money throughout the history of civilization to present day (9 marks)
- b) i) Define the term credit (2 marks)
- ii) List down and briefly explain three main instruments of credit (9 marks)
- c) i) Briefly explain the following terms
- Treasury bills
 - Merchant banks
 - Stock exchange (6 marks)
- ii) List down two types of shares (2 marks)

QUESTION TWO

- a) Explain the following terms as used in the organization chart of a firm
- i. Authority
 - ii. Responsibility
 - iii. Accountability
 - iv. Lateral relationship
 - v. Functional relationship (15 marks)
- b) Explain why it is important to delegate balanced authority and power and why it is not possible to delegate responsibility (5 marks)

QUESTION THREE

- a) Suggest three factors that may reduce production cost in a firm (3 marks)
- b) With the aid of a flow diagram illustrate an organization structure for a medium sized construction firm giving one role of each personnel shown (17 marks)

QUESTION FOUR

- a) List down five characteristics of ordinary shares (5 marks)
- b) Explain the following terms
- i. Cumulative preference shares
 - ii. Non-cumulative preference shares
 - iii. Debentures (6 marks)
- c) List down five functions of a stock exchange (5 marks)
- d) State two markets that the financial market can be divided into citing two examples in each case (4 marks)

QUESTION FIVE

- a) Explain the following terms as used in banking
- i. Cheque
 - ii. Bank drafts
 - iii. Bill of exchange
 - iv. Promissory note (8 marks)
- b) Outline six primary functions of money (6 marks)
- c) Mention six qualities of good money in order for it to perform its functions more appropriately (6 marks)



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SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING
DIPLOMA IN BUILDING TECHNOLOGY

BCECD 117: ENGINEERING DRAWING II

Date: 3/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

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

QUESTION ONE (COMPULSORY) - 30 MARKS

- a) Figure 1 (a) shows a block drawn in isometric projection. Copy the figure and show all the dimensions (20 marks)
- b) Draw the disc shown in figure 1 (b) in isometric projection (10 marks)

QUESTION TWO

Figure 2 shows a pictorial drawing in isometric projection. Draw its orthographic views in first angle projection with the front elevation viewed from the direction of arrow 'X'. Indicate all dimensions. Do NOT copy the figure (20 marks)

QUESTION THREE

Draw figure 3 in third angle projection and show all dimensions. The front elevation is as viewed from the direction of arrow 'A'. Do NOT copy the figure. (20 marks)

QUESTION FOUR

Figure 4 shows three views of a block drawn in third angle projection. Assemble the views and produce a pictorial drawing with 'A' as the lowest point. (20 marks)

QUESTION FIVE

To a scale of 2:1, draw figure 5 in isometric projection and indicate all the dimensions (20 marks)



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DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR CERTIFICATE IN BUILDING
CONSTRUCTION TECHNOLOGY

BCEBT 107: ENGINEERING DRAWING I

Date: 9/12/2015

Time: 8:30 – 10:30 AM

INSTRUCTIONS:

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

QUESTION ONE (COMPULSORY) - 30 MARKS

- a) Draw a regular hexagon outside a circle of diameter 90mm (10 marks)
- b) Construct a regular octagon given one of its side as 40mm (10 marks)
- c) Inscribe a triangle inside a circle of diameter 60mm (10 marks)

QUESTION TWO

- a) Draw a common internal tangent to two equal circles of 50mm diameter whose centers are 110mm apart (10 marks)
- b) Construct a common external tangent to two unequal circles of diameter 70mm and 50mm respectively and whose centers are 100mm apart (10 marks)

QUESTION THREE

- a) Inscribe a regular hexagon in a circle of diameter 100mm (10 marks)
- b) Using a compass and a straight edge only, construct a parallelogram given the following;

- One side (AB) 90mm
- One side (BC) 40mm
- One angle $\angle ABC = 60^\circ$

(10 marks)

QUESTION FOUR

Construct an ellipse using the intersecting arcs method and on it show a tangent and a normal.

Take major axis as 120mm and minor axis as 80mm

(20 marks)

QUESTION FIVE

- a) Construct a left hand helix having a pitch of 30mm and a pitch diameter of 50mm for two revolutions (10 marks)
- b) Construct a diagonal scale 50mm to 1m to read up to 3m. On the same scale show the dimension of 2.47m. (5 marks)
- c) Divide a line $AB = 80\text{mm}$ proportionally in the ratio 1:2:4 (5 marks)



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SECOND SEMESTER EXAMINATION FOR DIPLOMA IN BUILDING TECHNOLOGY

BCE BD 118 : BUILDING TECHNOLOGY I

Date: 3/12/2015

Time: 8:30 – 10:30 AM

INSTRUCTIONS:

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

- 1 a) Explain one duty of the following members of the building team
- i. Client
 - ii. Engineers
 - iii. Quantity surveyor
 - iv. Contractor (6 marks)
- b) i. Briefly explain precautions to be taken in the various stages of the building process so as to achieve quality assurance goals (6 marks)
- ii. Explain five functional requirements of a load bearing wall (6marks)
- c) With the aid of a well labeled sketch, show a wide strip foundation stating where it can be used. (8marks)
- d) Mention four ways in which moisture may find its way into a building (4 marks)

- 2 a) Briefly define the following features of a wall opening
- i. Arch
 - ii. Lintel
 - iii. Sill
 - iv. Threshold
 - v. Jamb (5 marks)
- b) i) State five factors that govern the choice of a wall finish (5 marks)
- ii) With an aid of a sketch illustrate the construction of a solid ground floor at internal walls (6 marks)
- c) List four performance requirements of a window (4 marks)
- 3 a) Explain two purposes of site investigation (4 marks)
- b) List down and explain the information that should be included in a typical site visit report (10 marks)
- c) Enumerate the purpose of the following site activities
- i. Site clearance
 - ii. Site investigation (6 marks)
- 4 a) i) List down and briefly explain five functional requirements of a floor (10 marks)
- ii) Briefly describe the application of the following types of finishes
- Plastering
 - Terrazzo (5 marks)
- b) Describe any three classes of sub soils according to the Building Code giving one characteristic of each (5 marks)
- 5 a) A single storey domestic building is to be constructed on a site with loose soil. With the aid of well annotated sketches illustrate;
- i. One type of foundation suitable for this type of soil
 - ii. Timbering to a shallow foundation trench suitable to the type of soil (12 marks)
- b) i) With the aid of labeled sketches illustrate three basic types of timber roofs (6 marks)
- ii) Define the term 'Quality Assurance' (2 marks)



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FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCECD 206: ENGINEERING DRAWING III

Date: 1/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

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

QUESTION ONE (COMPULSORY) - 30 MARKS

- a) Figure 1 (a) shows the elevation of a gate pillar. Draw an isometric view of the pillar making corner 'X' the lowest point. (10 marks)
- b) Figure 1 (b) shows the front elevation and an incomplete plan of a frustrum of a cone. Draw full size the following;
- (i) The complete sectional plan
 - (ii) The surface development of the truncated cone (10 marks)
- c) Figure 1 (c) shows the floor plan of a simple nursery school classroom. To a scale of 1:50, draw a typical cross section B-B from the foundation strip upto and including cement sand floor screed. (10 marks)

QUESTION TWO

The front elevation of a hexagonal pyramid of base side 30mm and a height of 75mm is shown in figure 2. The pyramid has been cut by a cutting plane X-X inclined at an angle of 30 to the base. Draw in first angle projection the following views;

- (i) the given elevation
 - (ii) the complete sectional plan
 - (iii) an end elevation from the direction of arrow 'A'
 - (iv) the true shape of the cut surface
- (20 marks)

QUESTION THREE

Figure 3 shows a truncated hexagonal pyramid drawn in first angle projection. To full size, draw;

- (i) Sectional plan
 - (ii) An auxiliary elevation from direction 'H'
- (20 marks)

QUESTION 4

Figure 4 shows a right solid cylinder chopped along a cutting plane Y-Y at 45° to the base. Draw;

- (i) the given elevation
 - (ii) the complete sectional plan
 - (iii) draw the true shape of the cut surface
 - (iv) the development of the cylinder
- (20 marks)

QUESTION FIVE

Figure 5 shows two cylinders of unequal diameters intersecting each other at an angle of 30° to the base. Draw the following views;

- (i) The front elevation as shown
 - (ii) A complete plan
 - (iii) The curve of intersection
 - (iv) Development of the small cylinder
- (20 marks)