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

2707/304: CONSTRUCTION MANAGEMENT II, ESTIMATING AND COSTING II
2705/304:
Date: 5/8/2016 **Time: 8.30-10.30 AM**

INSTRUCTIONS:

- *This paper consists of Eight Questions in Two Section; A and B*
- *Answer any Five questions choosing THREE questions from Section A and Two questions from Section B,*
- *All questions carry equal marks*
- *Maximum marks for each part of a question are as shown.*

SECTION ONE

1. a) Explain the aim of work study in an organization. (2 marks)

   b) List down four objectives of work study. (4 marks)

   c) Define the terms methods study and work measurement. (4 marks)

   d) The following data concerns the assembly of one electric switch;

   - Mean observed time for assembly 0.9 min
   - Performance rating 110%.
   - Personal allowance 7%.

   a) Determine the standard time for the assembly of one switch.

   b) The number of switches assembled in a shift of 8 hours. (10 marks)

2. a) Explain three remedies for breach of contract. (6 marks)

   b) Outline three defences which a defendant may put out forward for an action of trespass on land. (6 marks)

   c) Outline four ways of terminating a contract or offer. (8 marks)

3. a) Explain two forms of defamation and briefly explain two defenses and two remedies for defamation. (12 marks)

b) Explain each of the following as applied in law;

i) Vicarious liability

ii) Negligence

iii) Trespass

iv) Arbitration (8 marks)

4. a) Define the following as used in property ownership;

i) Leases

ii) Mortgage

iii) Freehold (6 marks)

b) List down five sources of law in Kenya. (5 marks)

c) Outline four factors that make a contract null and void. (6 marks)

d) State three circumstances under which a contract is discharged by frustration. (3marks)

5. a) State four advantages of critical path method of planning over the Gantt chart. (4 marks)

b) The table below shows the activities of a project:

Activity	**Event**	**Duration (Weeks)**
A	1-2	2
B	1-3	3
C	1-4	4
D	2-5	5
E	3-5	6
F	4-2	7
G	4-6	8
H	5-7	5
I	7-8	9
J	6-8	0
K	6-9	9
L	8-10	11
M	9-10	12

i) Prepare an arrow network diagram.

ii) Calculate the earliest starting time and latest starting time for each activity.

iii) Show the critical path and project duration. (16 marks)

SECTION TWO

6. a) Briefly explain any five roles of a construction estimator in the construction industry. (10 marks)

b) Differentiate the meaning of the following terms as used in building up of unit rates:

i) Net rate

ii) Gross rate

iii) Overheads

iv) Profit

v) Labour constants (10 marks)

7. Build up unit rate per m^3 for providing a 175mm thick reinforced concrete floor slab given the following data:

- Length of slab =6m
- Width of slab =3.5
- Concrete ratio = 1:2:4
- Density of cement =1550kg/m^3
- Density of ballast =1400kg/m^3
- Density of sand =1700kg/m^3
- Cost of ballast per 7 tonne lorry =kshs 12,000.00
- Cost of sand per 7 tonne lorry = kshs 16,000.00
- Cost of cement per tonne = kshs 14,000.00
- Cost of reinforcement (Y12) per one length = kshs 550
- Cost of reinforcement (Y8) per one length = kshs 400

Make other relevant assumptions. (20 marks)

8. Build up unit rate per m^3 for using an excavator to excavate an area of 1500m^2 to a depth of 1.5m starting from the stripped level. Use the following data:

- Hiring rate of excavator per hour = kshs 20,000.00
- Fuel consumption per hour = 15litres

- Cost of fuel per litre = kshs 80.00
- Oil and lubrication per hour = 2litres
- Cost of oil and lubrication per litre = kshs 185.00
- Plant output per hour = $4.5m^3$
- Plant efficiency = 85%
- Skilled labour per hour =kshs 150.00
- Unskilled labour per hour = kshs 65.00

Make other relevant assumptions. (20 marks)

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FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCDECD 117: ENGINEERING DRAWING II

Date: 10/8/2016 **Time: 2:00 – 4:00 PM**

INSTRUCTIONS

This paper consists of FIVE questions
Answer question one and any other two questions in this paper

1. a) Fig. 1(a) shows a block drawn in isometric projection. Copy the figure and indicate all the dimensions. (15 marks)

   b) Fig. 1 shows a figure drawn in isometric projection: Draw orthographic views of the figure in first angle projection with the front elevation looked from direction of arrow. A.(15 marks)

2. a) Fig. 2 Shows a figure drawn in isometric projection. Draw its orthographic views in third angle projection. (20 marks)

3. From Fig. 3. Draw, the following;

   a) The front elevation from direction of arrow A.

   b) The end elevation from direction of arrow B.

   c) The plan in First angle projection. (20 marks)

4. Fig.4 shows three orthographic views of a block. Assemble the views and produce its isometric drawing making corner A the lowest point. (20 marks)

5. Fig 5 shows a cylinder that has been mounted on a block drawn in isometric projection. Copy the figure and dimension it fully. (20 marks)

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FIRST SEMESTER EXAMINATION FOR

DIPLOMA IN BUILDING TECHNOLOGY

DIPLOMA IN CIVIL ENGINEERING

BCDECD 206: ENGINEERING DRAWING III

Date: 8/8/2016 **Time: 2:00 – 4:00 PM**

INSTRUCTIONS

This paper consists of FIVE questions
Answer question one (compulsory)carry 30 marks and any other two questions

QUESTION ONE

a) From figure 1 (a) draw an isometric section on the cutting plane G.G and show all the dimensions. (20 marks)

b) Fig. 1(b) shows the floor plan of a simple nursery school classroom. To a scale of 1:10 draw a typical cross section "BB" from the foundation strip up to and including cement/sand screed. (10 marks)

QUESTION TWO

Fig 2 shows a hexagonal pyramid cut by a cutting plane Y-Y inclined at an angle of 30^0 to the base. Draw the following views:-

a) The complete sectional plan.

b) The end elevation.

c) True shape of the cut surface

d) Surface development of the frustum. (20 marks)

QUESTION THREE

Fig 3 shows a cylinder that has been cut from the bottom. Draw;

a) The given views

b) The plan

c) The development of the cylinder. (20 marks)

QUESTION FOUR

Fig 4 show a right solid cylinder cut by a cutting plane X-X at an angle of 45^0 to the base. Draw;-

a) The complete sectional plan.

b) True shape of the cut surface.

c) The development of the frustum. (20 marks)

QUESTION FIVE

Fig. 5 shows a cone that has been cut at an angle of 45^0 to the base. Draw the following:-

a) The given views.

b) The complete sectional plan.

c) End elevation.

d) True shape of cut section.

e) Auxiliary elevation on the front elevation at an angle of 30^0. (20 marks)

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SECOND SEMESTER EXAMINATION FOR

DIPLOMA IN BUILDING TECHNOLOGY

DIPLOMA IN CIVIL ENGINEERING

BCDECD 110: ECONOMICS FOR ENGINEERS

Date: 2/8/2016 **Time: 2:00 – 4:00 PM**

INSTRUCTIONS

This paper consists of FIVE questions
Answer question one (compulsory)carry 30 marks and any other two questions

QUESTION ONE

a) Explain the evolution of money from exchange in commodity to the current use of plastic cards. (10 marks)

b) Outline the scope of economics. (10 marks)

c) i) Explain the main role of stock exchange.

ii) Outline the following types of shares.

- Equity
- Cumulative preference shares
- Irredeemable debentures (10 marks)

QUESTION TWO

a) Outline the roles played by the central bank of Kenya. (10 marks)

b) Explain the following terms;-

i) Promissory notes

ii) Capital market

iii) Stock dealer

iv) Bond

v) Bill of exchange (10 marks)

QUESTION THREE

a) Explain the following terms as used in the organization structure of a firm;

i) Authority

ii) Responsibility

iii) Accountability

iv) Lateral relationship (10 marks)

b) Explain why it is vital to delegate balanced authority and power and why it is not possible to delegate responsibility. (5 marks)

c) Outline the function of a distributor and their relevance in marketing of the company products. (5 marks)

QUESTION FOUR

a) List down and explain five roles played by commercial banks. (10 marks)

b) Enumerate five functions of money. (5 marks)

c) Outline five qualities of a good money. (5 marks)

QUESTION FIVE

a) Explain the following terms as used in banking;-

i) Cheque

ii) Bank drafts

iii) Bill of exchange

iv) Capital market (8 marks)

b) Distinguish between wealth and income. (3 marks)

c) List down and briefly explain three main instruments of credit. (9 marks)

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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCE CD 301: WORKSHOP TECHNOLOGY (MECHANICAL)

Date: 12/8/2016 **Time: 2:00 – 4:00 PM**

INSTRUCTIONS

This paper consists of FIVE questions
Answer question one (compulsory)carry 30 marks and any other two questions

QUESTION ONE COMPULSORY

a) Briefly explain five precautions considered in safety of machine tools (10 marks)

b) Outline three fire-fighting techniques. (3 marks)

c) Name any three classes of fire risks citing examples in each case. (7 marks)

d) Outline the scope first aid. (8 marks)

e) Define the term pump. (2 marks)

QUESTION TWO

a) Describe three basic essentials required before a fire can start. (6 marks)

b) Outline why it is necessary to give first aid to casualties. (3 marks)

c) State four measures that are considered in the use of a hacksaw. (4 marks)

d) Outline seven functions of a pump. (7 marks)

QUESTION THREE

a) With the aid of a neat well labeled diagrams, explain how a four stroke cycle petrol engine operates. (20 marks)

QUESTION FOUR

a) List down four advantages and four disadvantages of centrifugal pumps. (8 marks)

b) List down five factors to be considered when installing a pump. (5 marks)

c) Enumerate three important points to consider regarding pumps. (7 marks)

QUESTION FIVE

a) A single acting reciprocating pump delivers 2623 l/hr

Piston rod diameter	=	20 min
Stroke (s)	=	110mm
n	=	90 rev/mim

Calculate the piston diameter (10 marks)

b) A double acting reciprocating pump delivers 4154 m3/hr

Piston rod diameter	=	20mm
Stroke	=	160 mm
n	=	54 rev/min

Calculate the piston diameter. (10 marks)