

**SECTION A :**  
**ESTIMATING, TENDERING AND ENGINEERING CONTRACTS**

*Answer any **THREE** questions from this section.*

1. (a) (i) Explain the 'Law of Tort'.  
(ii) List **three** rights, both personal and in respect to property that are recognised in 'Tort'. (4 marks)
- (b) Explain the following liabilities to tort.  
(i) joint liable;  
(ii) vicarious liability;  
(iii) liability of occupier. (6 marks)
- (c) Describe the following remedies for breach of contract;  
(i) action of damages;  
(ii) specific performance;  
(iii) injunction;  
(iv) quantum merit. (8 marks)
- (d) Explain 'performance' as used in the discharge of contract. (2 marks)
2. (a) State **four** advantages of critical path method in construction works planning. (4 marks)
- (b) Explain the following terms as used in critical path analysis.  
(i) concurrent operations;  
(ii) slack. (4 marks)
- (c) Draw the network for the following:

Operation	Precedes
A	B
B	C, D
C	E, F
D	E
E	G
F	G

(8 marks)

(d) The following information refers to drawing and printing works for a building engineer.

A:	Drawing	4 days
B:	Drawing using ArchCAD	2 days
C:	Marking prints	2 days
D:	Cutting and folding	1 day

(i) Draw the bar chart.

(ii) Determine the time required to complete the work. (4 marks)

3. (a) State **four** advantages of open tendering. (4 marks)

(b) Outline **four** contents of the following tender documents:

(i) contract with quantities;

(ii) contract without quantities. (8 marks)

(c) Describe the following purchasing functions;

(i) placing of order;

(ii) verification of invoices. (4 marks)

(d) Explain the following with regards to supplies of materials in a company.

(i) statement of accounts;

(ii) debit note. (4 marks)

4. (a) Describe 'Bill of Quantities Contract' as used in project management. (3 marks)

(b) Outline **five** documents required from contractors when applying for electrical contractual jobs. (5 marks)

(c) List **four** documentations issued to a client on certification of practical completion of a building. (4 marks)

(d) (i) Describe 'arbitration' as a procedure for settlement of disputes.

(ii) Explain **five** advantages of arbitration. (8 marks)

5. (a) Labour and material costs form the major part of the costs of any electrical works. List **six** other costs to be estimated before the final cost is prepared. (6 marks)

(b) (i) Differentiate between direct labour and indirect labour.

(ii) State **four** allowances considered when calculating direct labour cost. (8 marks)

- (c) An installation work involves wiring of 120, two bedroomed houses. The materials for the work are bought from the factory where direct material cost for the 120 units is Ksh. 6,500,000 and the direct labour cost is Ksh. 2,640,000 and the factory overhead expenses are 30% of the total material cost and labour cost.

Determine the:

- (i) prime cost;  
(ii) factory cost.

(6 marks)

### SECTION B: INDUSTRIAL MANAGEMENT

Answer any **TWO** questions from this section.

6. (a) (i) Describe the term 'capital' as a factor of production. ✓  
(ii) Explain **four** functions of capital. ✓ (6 marks)
- (b) (i) Explain the term 'Division of Labour'.  
(ii) State **two** advantages and **two** disadvantages of division of labour. ✓ (6 marks)
- (c) List **two** functions of money. ✓ (2 marks)
- (d) Explain **three** functions of Banks. ✓ (6 marks)
7. (a) Outline **five** achievements of Taylor in the history of management. (5 marks)
- (b) (i) Describe 'Management by Objectives'.  
(ii) State **four** advantages of management by objectives. (6 marks)
- (c) (i) Define the term 'office'.  
(ii) List **three** functions of an office. ✓ (5 marks)
- (d) Explain 'Collective Bargaining' as used in trade unions. (4 marks)

8. ✖ (a) Explain the following activities in production planning:
- (i) routing;
  - (ii) scheduling;
  - (iii) dispatching. (6 marks)
- (b) Describe the following techniques of statistical quality control.
- (i) control chart;
  - (ii) acceptance sampling. (6 marks)
- (c) An operator manufactures 20 plastic buckets of 10 litres in 2 hours 45 minutes which includes the time for settling his machine. The standard time allowed for the job is:
- Settling time = 30 minutes, production time per piece = 7 minutes.
- Determine the operators efficiency. (5 marks)
- (d) State **three** functions of electrical maintenance department in an organisation. (3 marks)

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