

2521/301, 2602/301  
2601/301, 2603/301  
INDUSTRIAL MANAGEMENT,  
ESTIMATING, TENDERING AND  
ENGINEERING SERVICES CONTRACTS  
Oct./Nov. 2018  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING  
(POWER OPTION)  
(TELECOMMUNICATION OPTION)  
(INSTRUMENTATION OPTION)  
MODULE III

INDUSTRIAL MANAGEMENT, ESTIMATING, TENDERING AND  
ENGINEERING SERVICES CONTRACTS

3 hours

INSTRUCTIONS TO CANDIDATES

*The paper consists of EIGHT questions in TWO sections, A and B.  
Answer any TWO questions from Section A and any THREE questions from Section B in the  
answer booklet provided.  
All questions carry equal marks.  
Maximum marks for each part of a question are as indicated.  
Candidates should answer the questions in English.*

This paper consists of 4 printed pages.

Candidates should check the question paper to ascertain that  
all the pages are printed as indicated and that no questions are missing.

© 2018 The Kenya National Examinations Council

Turn over



found

SECTION A  
INDUSTRIAL MANAGEMENT

Answer any TWO questions from this section.

1. (a) State five fundamental principles of scientific approach to management as outlined by Fredrick Taylor. (5 marks)
- (b) (i) Outline three classes of managerial roles.  
(ii) For each of the three classes in b(i), list two specific roles performed by a manager. (9 marks)
- (c) (i) Define planning as used in management.  
(ii) Explain four principles of a 'Good plan'. (6 marks)
2. (a) Explain the term 'Plant layout as used in industrial organisation and management. (2 marks)
- (b) State two: <sup>organizational structure of an industry including man, machine and material</sup>  
 (i) merits of plant layout to a manufacturer. (4 marks)  
 (ii) factors considered while selecting a type of plant layout. <sup>① Quality product etc  
② Continuous product etc</sup> (4 marks)
- (c) In project management, the size, length and scope of a project vary according to its nature and purpose. Explain the five phases of a project life cycle. <sup>→ ~~sketch~~ ① availability of materials and labour  
② capital or cost of the plant layout</sup> (10 marks)
- (d) Sketch a schematic diagram of a work breakdown structure for a project. (4 marks)
3. (a) (i) Explain the role of trade unions in organization management. <sup>fighting rights to rights of employees</sup>  
(ii) Name two trade unions in Kenya. \*  
(iii) Outline three challenges faced by trade unions. <sup>→ no support from govt. → mistreatment of their leaders  
→ some are considered unlawful by the government</sup> (10 marks)
- (b) State four roles of a shop-steward as a workers' representative. <sup>→ keeping records → doing purchases → ensuring customer relations</sup> (4 marks)
- (c) (i) Explain two types of trade dispute resolution processes in an organization.  
(ii) Outline two challenges of delayed trade disputes in an organization. <sup>→ employees cannot report to work.  
→ running of organisation is stopped.</sup> (6 marks)





**SECTION B:**  
ESTIMATING, TENDERING AND ENGINEERING SERVICES CONTRACTS

*Answer any THREE questions from this section.*

4. (a) Explain the Bar-chart model used in project planning and control progress. (3 marks)
- (b) Define the following terms in network analysis:
- (i) activity; - is a day by day routine work
  - (ii) events; -
  - (iii) dummy activity. (6 marks)
- (c) College workshops for Electrical, Mechanical and Automotive are to be build in that order. Three teams are to be employed in the construction, working in the following order: Masons, Plumber and electricians.

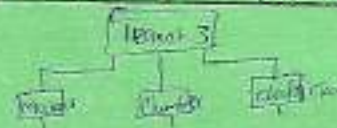
No team can commence work until the previous team has finished. Table 1 shows the estimated duration of activities in weeks.

Table 1

Building	Electrical	Mechanical	Automotive
	A	B	C
Mason	2	4	3
Plumbing	3	2	3
Electrical installation	2	5	2

Team 1 - Masons  
3 - Plumber  
- Electrician

- (i) Draw the network diagram.
- (ii) Determine the minimum project time and the critical path. (11 marks)



5. (a) State three sources of Kenya law. (3 marks)
- (i) Explain 'lawful consideration' as used in the law of contract.
  - (ii) List four causes of 'lapse of offer'. (7 marks)
- (c) (i) Explain the theory of fundamental breach.
- (ii) List three remedies of breach of contract. (5 marks)
- (d) (i) Define arbitration as used in law.
- (ii) List three essentials of a valid arbitration agreement. (5 marks)



6. (a) List **six** documents required when estimating. (6 marks)
- (b) State **three** benefits of implementing quality assurance during estimating. (3 marks)
- (c) Explain the significance of each of the following in a final estimated figure for a project:
- (i) materials;
  - (ii) transport;
  - (iii) insurance.
- (6 marks)
- (d) Contractors have standard forms of enquiry for supplies. List **five** categories of information required by the suppliers. (5 marks)
7. (a) Explain **two** ways in which selective tendering is carried out. (4 marks)
- when the tenderer only needed the details to apply*  
*→ when tenderer needs only a specific tenderer*
- (b) Explain the need for each of the following items in a tender document:
- (i) drawings; *→ quantity and describe the work*
  - (ii) bill of quantities. *→ gives total sum of amount to be used in construction process*
- (4 marks)
- (c) Explain **five** properties of 'specification' used in tendering process. (10 marks)
- (d) The 'Basis of a Tender' documents indicates the way in which the contractor will be paid. List **two** such documents. (2 marks)
8. (a) (i) Explain 'Material Schedule' in contracting. ✓
- (ii) Prepare a sample material schedule chart. ✓
- (6 marks)
- (b) Define 'quotation' as used in purchase and supply of materials. ✓ (2 marks)
- (c) (i) Outline the components of a 'statement of accounts'. ✓
- (ii) Explain the importance of the document in c(i) (6 marks)
- (d) (i) Define 'purchase order'. -
- (ii) Name **four** components of a purchase order. (6 marks)

THIS IS THE LAST PRINTED PAGE.

*Approx*