2207/305
INDUSTRIAL ORGANISATION AND MANAGEMENT
Oct./Nov. 2016
Time: 3 hours

THE KENYA NATIONAL EXAMINATIONS COUNCIL

DIPLOMA IN AERONAUTICAL ENGINEERING (AVIONICS)
COMMUNICATION AND NAVIGATION OPTION

INDUSTRIAL ORGANISATION AND MANAGEMENT

3 hours

INSTRUCTIONS TO CANDIDATES

You should have a scientific calculator and a mathematical table for this examination.
*Answer any **FIVE** of the **EIGHT** questions in the answer booklet provided.*
***All** questions carry equal marks.*
Maximum marks for each part of a question are as shown.
Candidates should answer the questions in English.

This paper consists of 5 printed pages.

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

Turn over

- Quality products through inspection of
- quality control inspection standards

1. (a) State **two** objectives of inspection in manufacturing and production. (2 marks)

- Complains - inspection of raw materials - defects eradicate, identify

(b) Explain the following quality control inspection standards: -

(i) standards for raw materials; - Standards enforced to ensure quality inspection of the raw materials before ~~being~~ manufacturing

(ii) standards for work-in-progress; process begins
- Processed materials

(iii) standards for finished products. - output products (6 marks)

(c) Describe the following control charts used in quality control:

(i) Mean chart.

(ii) Range chart. (4 marks)

(d) Table 1, indicates the number of points defects on the surface of an aircraft body.

Table 1

Body No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
No. of defects	2	2	4	7	5	6	7	14	2	9	8	0	5	1	3	10	4	3	2	6

(i) Compute the:

(I) average number defectives;
(II) upper and lower control limits.

(ii) Construct the control chart.

(8 marks)

✓ 2. (a) State **four** contents of a job description. (4 marks)

- land - capital
- labour - Entrepreneurship

(b) Explain the following leadership styles:

(i) the situational leadership; - leadership due to strategic occurance in a sudden situation

(ii) the appointed leadership.
leadership of a selected individual (4 marks)

(c) Outline the seven-point plan used when recruiting personnel. (8 marks)

- Advertising - interview - Physical test - Appointment letter
- Selecting - medical test

(d) Describe the following methods of training:

(i) on the job training;
- Training of sub-ordinates who are already employed in an organisation

(ii) apprenticeship training.
- selecting of an apprentice to be trained for a specific job (4 marks)

3. (a) (i) Sketch the project cost curves for a typical project.

(ii) Explain the application of the project cost curves in determining the optimum project duration. (6 marks)

(b) With respect to plant layout, explain the need for ventilations and air-conditioning.
- Better working conditions for employees - Clean air to breath
- Conducive temperature to work (2 marks)

(c) Table 2 shows data for the production of equipment "M". The equipment consists of three parts A, B and C. The parts are assembled together after manufacture. Part A is of cast iron which requires a pattern and a mould. Part B is to be machined on a special machine and then heat treated before assembling. The assembly has to be tested with a specially fabricated rig before dispatch.

Table 2

Activity	Description	Dependent Activity	Duration Days
1	Preparing pattern for casting part 'A'	None	5
2	Preparing mould for part 'B'	1	1
3	Casting and cleaning of part 'A'	2	2
4	Heat treatment of part 'C'	None	2
5	Obtaining and installing machine 'M'	None	8
6	Machining part 'B'	5	3
7	Assembling parts 'A', 'B' and 'C'	6	4
8	Preparing test rig 'D'	None	3
9	Testing assembly 'E'	8	4
10	Packing and dispatch 'F'	7	1

(i) Draw a Gantt chart of the activities.

(ii) From the chart, determine the project completion time.

(12 marks)

4. (a) Define the following as used in inventory control:

(i) lead time;

(ii) economic Order Quantity.

(2 marks)

(b) Describe the following types of inventory control systems:

(i) re-order level system (ROL);

(ii) periodic review system (PRS).

(4 marks)

(c) An industry has an annual usage of 6000 units of a component purchased at Ksh. 20 each. The ordering costs are Ksh.150 per order and the annual holding costs per component are Ksh.0.5.
Determine the optimum number of orders per annum. (14 marks)

5\. (a) Describe the following types of plant layout:

(i) process layout;
(ii) product layout.

(6 marks)

(b) Table 3 shows factors considered in the selection of site location of a factory.

Table 3

Factor	Unweighted site evaluation			Weighting %
	Site 1	Site 2	Site 3	
Labour	10	8	7	40
Raw material	8	7	6	20
Power	8	7	10	10
Transport	7	9	8	10
Local taxes	6	10	9	10
Climatic Conditions	5	9	10	5
Politics	6	5	10	5

Determine the most desirable site location using the "operation research technique".

(14 marks)

6\. (a) Define management. - Process of Controlling, Planning and organizing resources and personnel to meet org goals (2 marks)

(b) Explain the following management activities:

(i) planning; - Coming up with ideas of management in an org

(ii) organizing. - management activity which involves

(6 marks)

(c) Describe the following concepts as used in strategic management.

(i) SWOT Analysis; - Strength - Weakness - Opportunities - Threats

(ii) The Boston Consultative Group Matrix (BCG).

(8 marks)

(d) Illustrate the rational concept of an organisation structure as expounded by Henry Mintzberg. (4 marks)

Bureaucracy Hierarchy

MBO

7. (a) Define marketing. (2 marks)

(b) Describe the 4 Ps of marketing. (8 marks)

- Production - Planning - Product - Profit

(c) Highlight any **four** objectives of budgeting. (4 marks)

- Proper utilization of resources - Effective planning - Minimized waste of resources
- " " capital - Effective Production -

(d) Describe the following classes of budget:

(i) master budget;

(ii) production budget;

(iii) sales budget.

(6 marks)

8. (a) Outline the procedure for carrying out work study. (8 marks)

Selecting Dev new method
recording Define "
examining install "
Maintain "

(b) Explain the following errors associated with work sampling techniques:

(i) observational error; - error in

(ii) experimental error. - trial error

(4 marks)

(c) Describe the following stages of performing time study in work measurement.

(i) analysis of work; - Examining of work with time

(ii) standardisation of methods.

Dev, Define instal methods into Standardized Practice (4 marks)

(d) An operator manufactures 50 units in 6 hours and 30 minutes inclusive of time for setting his machine. If the standard time allowed for setting the job is 35 minutes and the production time per piece is 8 minutes.
Calculate the operator's efficiency. (4 marks)

50 units 6hours 30mins ST = 35mins
PT = 8mins
E = ?

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