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 the following for this examination:
  Non-programmable scientific calculator;
  Mathematical table;
  Answer booklet.

*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.**

1. (a) State **four** functions of management at supervisory level in a factory. (4 marks)

   (b) Explain **three** features of F. W. Taylor's scientific management theory to production efficiency in industrial organisations. (6 marks)

   (c) Distinguish between working capital and fixed capital as used in financial management. (4 marks)

   (d) (i) Outline the steps involved in the budgetary control process.

       (ii) Highlight **three** reasons why budgetary control is important to an organisation. (6 marks)

2. (a) State **four** advantages of decentralised systems industrial organisations. (4 marks)

   (b) With the aid of a labelled sketch, describe the matrix form of organisation structure. (6 marks)

   (c) State, with reasons, **two** disadvantages of creating too many layers of supervision in an organisation. (4 marks)

   (d) Explain **three** demerits of management by objectives as practiced in management. (6 marks)

3. (a) State **four** factors considered by organisations when purchasing spare parts. (4 marks)

   (b) Describe the following types of registers in stores control:

       (i) consumable register;

       (ii) daily receipts register. (4 marks)

(c)   Table 1 shows receipts and issues of WANGWA Ltd stores department for the month of May 2014.

Table 1

Date	Receipts	Unit cost (Ksh)	Units Issued	Bin Balance (units)	Value of stock balance (Ksh)
7/5/2014	-	50	-	b/f 2000	100,000
9/5/2014	1000	70	-	3000	170,000
15/5/2014	1500	72	1800	2700	?
23/5/2014	4000	80	2500	4200	?
25/5/2014	2300	100	2000	4500	
31/5/2014	-	-	1600	?	

From the data given in table 1, determine:

(i)   (I)   The bins balance as at the closing of business on 31/5/2014.

        (II)   The value of stock issued during the month using the Last-In-First-Out (LIFO) method.

(ii)   If the recommended method for charging store issues in the company is First-In-First-Out (FIFO), determine the value of stock balances on 15th and 23rd May respectively.

(12 marks)

4.   (a)   Describe the following measurement techniques used in method study:

(i)   process charts;

(ii)   string diagrams.

(4 marks)

(b)   The following data was obtained by a work study specialist while studying a maintenance technician for a day.

Maintenance time
Putting away tools .... 14 minutes
Cleaning the machine .... 5 minutes
Oiling the machine .... 3 minutes
Interruption time
Interruption by foreman .... 4 minutes
Interruption by spanner boy .... 3 minutes
Other time losses
Delay due to power failure .... 8 minutes
Personal breaks .... 30 minutes

Assuming an 8-hour working day, calculate:

   (i)   total daily time allowance;

   (ii)   total available cycle time.

   (iii)   the technicians productive hour.

(6 marks)

  (c)   (i)   Describe the term 'productivity' as applied in the work place.

         (ii)   Explain **four** ways of increasing productivity in industrial organisation.

(10 marks)

5.   (a)   Outline **three** methods of carrying out inspection in an engineering firm.

(3 marks)

   (b)   (i)   Outline the procedure for single sampling plan in quality control.

        (ii)   State **two** examples where sampling inspection is applicable.

(6 marks)

   (c)   Explain the following terms used in statistical quality control:

        (i)   assignable cause variation:

        (ii)   sampling by attributes.

(4 marks)

   (d)   The following data relates to a product which was undergoing a quality control process

   Process mean $(\bar{\bar{x}})$ = 80.2 mm
   Mean range $(\bar{R})$ = 0.18 mm
   Sample size (n)   = 5
   Hartley's constant (dn)   = 1.64

   Use the data to compute the action and warning lines for the mean chart.

(7 marks)

6.   (a)   Describe the following tests used in employee selection processes:

        (i)   aptitude test;

        (ii)   personality tests.

(4 marks)

   (b)   Describe **four** methods used by organisations when carrying out Training Needs Assessment (TNA).

(8 marks)

   (c)   Explain **four** requirements of an effective employee performance appraisal plan.

(8 marks)

7.   (a)   Table 2 shows the Time/Cost relationships of a project.

     Table 2

Activity	Normal Time (weeks)	Crash Time (weeks)	Normal cost (K£)	Crash cost (K£)
1 - 2	5	4	600	800
1 - 3	3	1	400	600
1 - 4	8	5	900	1200
2 - 4	4	2	600	1200
3 - 4	4	3	500	700

     (i)   Draw the project network and determine the critical path.

     (ii)   Determine the total direct cost of the project.

     (iii) Crash the project such that its completion time reduces to 7 weeks.

                                                                              (13 marks)

     (b)   (i)   State **two** factors considered when pricing a new product.

           (ii)   Explain the stages of a product lifecycle.

                                                                              (7 marks)

8.   (a)   Outline **four** symptoms of poor plant layout.   (4 marks)

     (b)   Compare process layout and product layout in terms of the following criteria:

           (i)   workflow;

           (ii)   material handling;

           (iii)   space utilisation.

                                                                              (6 marks)

     (c)   State **four** characteristics of job production.   (4 marks)

     (d)   Highlight the activities involved in production control.   (6 marks)

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