

1501/205  
PRODUCTION PROCESSES  
TECHNOLOGY  
June/July 2023  
Time: 3 hours



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
CRAFT CERTIFICATE IN MECHANICAL ENGINEERING  
(PRODUCTION OPTION)

MODULE II

PRODUCTION PROCESSES TECHNOLOGY

3 hours

INSTRUCTIONS TO CANDIDATES

*You should have the following for this examination:*

*Answer booklet;*

*Drawing instruments;*

*Mathematical tables/Non-programmable scientific calculator.*

*Answer FIVE of the following EIGHT questions.*



*All questions carry equal marks.*

*Marks for each part of a question are as indicated.*

*Candidates should answer the questions in English.*

**This paper consists of 3 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) List **four** causes of fire due to a faulty in electricity in a workshop. (4 marks)
- (b) Explain **three** consequences of not following the proper first aid procedures. (6 marks)
- (c) List **four** specifications for power saw blades. (4 marks)
- (d) Explain **three** reasons that account for the many accidents associated with a portable drilling machine. (6 marks)
2. (a) List **four** consequences for failure to use cutting fluids where needed. (4 marks)
- (b) With the aid of a sketch, explain the drilling operation. (6 marks)
- (c) Explain **three** factors to be considered before performing a drilling operation. (6 marks)
- (d) List **four** types of grinding machines. (4 marks)
3. (a) List **four** parts of a lathe machine. (4 marks)
- (b) Explain **four** preparations to be carried out before performing a lathe operation. (8 marks)
- (c) With aid of sketches, explain each of the following lathe machine operations:
- (i) threading;  (8 marks)
- (ii) knurling.
4. (a) List **four** parts of a milling machine. (4 marks)
- (b) With the aid of a sketch, explain the indexing head of a milling machine. (8 marks)
- (c) Describe the procedure for indexing five divisions on a workpiece by simple indexing method. (2 marks)
- (d) Explain each of the following types of shaping machines:
- (i) standard shaper;
- (ii) horizontal shaper; 
- (iii) vertical shaper. (6 marks)

5. (a) Explain each of the following materials used for pattern making in casting of metals:
- (i) plastic;
  - (ii) wood;
  - (iii) metal.
- (6 marks)
- (b) Explain each of the following allowances in pattern making process of metal casting:
- (i) shake allowance;
  - (ii) draft allowance;
  - (iii) machining allowance.
- (6 marks)
- (c) Explain **four** advantages of hot working processes. (8 marks)
6. (a) Explain **two** characteristics of cold rolling. (4 marks)
- (b) With the aid of a sketch, explain the roll bending process in cold forming of metals. (6 marks)
- (c) Describe the procedure for sand casting of metals. (10 marks)
7. (a) List **four** types of installation information that are indicated on the drawings supplied with machinery by the manufacturer. (4 marks)
- (b) Explain **four** effects of vibrations with regard to machine installation. (8 marks)
- (c) Explain **four** duties of a maintenance department with regard to maintenance of machines. (8 marks)
8. (a) Explain **four** advantages of adhesives over mechanical fasteners. (8 marks)
- (b) List **four** tasks performed manually on a drilling machine that are program coded in numerically controlled (NC) drilling machine. (4 marks)
- (c) Explain **four** reasons that make NC machine safer in operation as compared to the manual type. (8 marks)

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