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TEVETA
Technical Education, Vocational and Entrepreneurship Training Authority

DIPLOMA IN PRODUCTION AND OPERATIONS MANAGEMENT

LEVEL 6 YEAR I EXAMINATIONS

FINAL INTEGRATED SUMMATIVE EXAMINATIONS

SITTING: NOVEMBER/DECEMBER 2025

SUBJECT: MANUFACTURING TECHNOLOGY I

TIME: THREE (3) HOURS **TOTAL MARKS: 100**

PASS MARK: 50

INSTRUCTIONS TO CANDIDATE

1. Write your Examination Number and National Registration Card Number (NRC) on the answer booklet provided
2. There are Two sections in this paper Sections A and B
3. Section A consists of ten (10) multiple choice questions. Answer all questions.
4. In Section B, there are six (6) questions. Answer question two (2 which is compulsory and any other three (3) questions of your choice from the remaining
5. Use pencils and graph papers (provided) for drawings
6. Cell phones are not allowed in the examination room.

DO NOT TURN THIS PAPER UNTIL YOU ARE TOLD TO DO SO

SECTION A (10 QUESTIONS MULTIPLE CHOICE- ANSWER ALL QUESTIONS)

QUESTION 1

1.1 Kamutamba is a first year student at college and is required to wear full PPE with reflectors as she goes to the workshop. Which one of the following is the reason for reflectors on the work suit?

a) Increases protection of students
b) Increases invisibility of students while in the workshop
c) Reduces idleness of students
d) Increases the ability to be seen by others (2 marks)

1.2 Students were assigned to produce and shape cylindrical parts with a neat clean finish. Which machine would be suitable for this work

a) Lathe machine
b) Milling machine
c) Shaper machine
d) Breaker machine (2 marks)

1.3 Which of the following measuring instrument is used for measuring components of limited accuracy quickly.

a) Micrometer
b) Vernier Caliper
c) Filler gauge
d) Engineers rule (2 marks)

1.4 Students have been assigned to manufacture a rubber water hose. Select the machine that would fit this operation

a) Drill press
b) Lathe machine
c) Milling
d) Extruders (2 marks)

1.5 Which of the following is a benefit of specialization?

a) Increased flexibility
b) Improved quality
c) Increased innovation
d) Increased complexity (2 marks)

1.6 Which type of wood is prone to warping and shrinkage due to its high moisture content?

a) Seasoned wood
b) Unseasoned wood
c) Kiln-dried wood
d) Air-dried wood (2 marks)

1.7 Ceramic is a common material in manufacturing. What is the main advantage of ceramics in manufacturing?

a) High strength-to-weight ratio
b) Corrosion resistance
c) High thermal conductivity
d) Electrical insulation (2 marks)

1.8 Kaluba is using a Shears for cutting in a Workshop. What type material is he likely working with?

a) Steel metal
b) Steel sheet metal
c) Steel plate
d) Steel bar (2 marks)

1.9 Housekeeping in a workshop consist of.....

a) Always tidying up the workshop to reduce risk of accidents
b) Checking for faults on machines to avoid accidents
c) Painting yellow lines to indicate gang-ways to reduce risk of accidents
d) Practice cleaning practices to avoid accidents (2 marks)

1.10 What is the main purpose of standardization to the manufacturer?

a) To ensure quality and ensure consistency
b) To reduce costs and increase efficiency
c) To improve safety and reduce risk
d) To enhance customer satisfaction (2 marks)

Total (20 marks)

SECTION B

Section B carries Six (6) questions with question Two (2) being compulsory. Attempt question two (2) and any other three (3) questions. All questions carry 20 marks each.

QUESTION 2

Kapilikiti Boat Building Zambia Ltd imports Teak timber for building boats in Zambia. It has been proved that Teak performed better than the indigenous woods. For this reason the Manufacturing Technologist recommended of seasoned Teak timber. The company also manufactures boats using plastics polymers.

a) State **two (2)** reasons Teak is suitable for boat building. (4 marks)
b) With the aid of **two (2)** examples, describe other indigenous woods which are suitable for building boats in Zambia (4 marks)
c) Explain **two (2)** types of timber seasoning methods. (4 marks)
d) Explain **four (4)** plastic joints that maybe used. (8 marks)

Total (20 marks)

QUESTION 3

a) Filing is a common hand tool operation. State **five (5)** steps to be followed when carrying out filing. (10 marks)
b) Kaluba Tech Zambia limited manufactures bolts and nuts of various sizes. Explain the process of cutting threads on a bolt M16. (10 marks)

Total (20 marks)

QUESTION 4

a) Wood can be preserved using preservatives. Preservatives fall into **three (3)** groups. State these groups. (3 marks)

b) Students are assigned to manufacture a box from sheet metal whose joints must be joined using the soldering process. Outline the steps involved in the manufacture of this box. (5 marks)

c) Distinguish between Natural adhesives and synthetic adhesives. (4 marks)

d) Describe **four (4)** properties of ceramic (8 marks)

Total (20 marks)

QUESTION 5

a) A drilling machine is a useful machine tool in the workshop. The new students were asked to observe operation done on the drilling machine. Explain **five (5)** operations that could be done on the Drilling machine. (10 marks)

b) Describe **five (5)** features of major importance in any Jig design. (10 marks)

Total (20 marks)

QUESTION 6

a) State **six (6)** procedures that must be undertaken in a works in order to prevent accidents. (12 marks)

b) During the turning process on a lathe, a milky liquid is produced by the machine and is splashed to the component being machined. Explain the importance of this liquid. (8 marks)

Total (20 marks)

QUESTION 7

a) Explain **five (5)** advantages of machine tools over the hand tools. (10 marks)

b) Students carrying out welding noticed that sometimes defects occurred during the Welding process. Explain **five (5)** welding defects that may occur. (10 marks)

(Total: 20 marks)