



AKENTEN APPIAH-MENKA UNIVERSITY OF SKILLS TRAINING AND
ENTREPRENEURIAL DEVELOPMENT
INSTITUTE FOR TEACHER PROFESSIONAL DEVELOPMENT AND
LIFELONG LEARNING (ITPDLL)
END OF FIRST SEMESTER EXAMINATION 2024/2025

COURSE CODE	EJT233
COURSE TITLE	METAL AND AUTOMOTIVE TECHNOLOGY I
DURATION	TWO HOURS

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Section A (20 Marks)

Choose the correct answer from letter A to D

1. Which of the following is worn to protect the heads from injury?
 - A. Gloves
 - B. Goggles
 - C. Helmet
 - D. Safety boots
2. Which of these statements is an advantage to cast iron? It.....
 - A. casts easily.
 - B. rusts slowly.
 - C. is strong in compression.
 - D. is weak in tension.
3. Taps are used for cutting
 - A. outside threads.
 - B. internal threads.
 - C. parallel holes.
 - D. vertical threads.

4. Tools are oiled before storage in order to.....
- A. keep them clean.
 - B. prevent misuse.
 - C. make them sharp.
 - D. prevent rusting.
5. Which of the following options can be described as rough, smooth, and dead-smooth?
- A. Hacksaw
 - B. Drill tips
 - C. File cuts
 - D. Die cut
6. Which of the following options is an external combustion engine?
- A. Diesel engine
 - B. Steam engine
 - C. Petrol engine
 - D. Gas engine
7. What is the final stage in pig iron production?
- A. Ore is melted in a furnace.
 - B. Iron is shaped into steel.
 - C. The molten iron is tapped into molds.
 - D. Limestone is mixed with the ore.
8. Which plastic processing method involves applying pressure and heat to create a permanent shape in thermoset plastics? The.....moulding
- A. blow
 - B. compression
 - C. injection
 - D. vacuum

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9. Which metal property increases when it is hardened?
- A. Brittleness
 - B. Ductility
 - C. Malleability
 - D. Flexibility
10. A significant land-based source of plastic waste is.....
- A. illegal fishing
 - B. sewage treatment discharge
 - C. volcanoes
 - D. solar radiation
11. Which of these metals was first discovered in the prehistoric era?
- A. Copper
 - B. Gold
 - C. Sulphur
 - D. Silver
12. What is the point angle of the dot punch?
- A. 60°
 - B. 90°
 - C. 45°
 - D. 30°
13. The tool used for measurements on stepped surfaces is known as.....
- A. divider
 - B. inside calliper
 - C. odd-leg calliper
 - D. veneer calliper
14. Which of the following options is **NOT** a raw material?
- A. Bauxite
 - B. Galena
 - C. Iron ore
 - D. Wrought Iron

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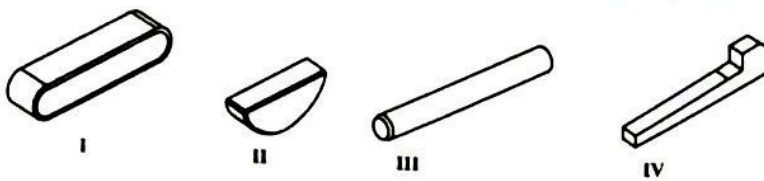
15. The equipment used for the production of wrought iron is furnace

- A. blast
- B. bessemer
- C. copula
- D. puddling

16. Aluminium is produced from.....

- A. galena
- B. bauxite
- C. pyrite
- D. Granite

Refer to the following diagrams which show a set of keys to answer items 17 and 18



17. Which of the keys is a feather key?

- A. I
- B. II
- C. III
- D. IV

18. Which of the figures identifies the dowel?

- A. I
- B. II
- C. III
- D. IV

19. At the end of the compression stroke in the S.I engine which of the following options is used?

- A. injector
- B. valve
- C. core plug
- D. spark plug

20. An injector sprays fuels into combustion chamber to initiate burning at the end of
- A. compression stroke.
 - B. induction stroke.
 - C. combustion.
 - D. stroke engine.

Section B (10 Marks)

Fil-in the blank space from question 21 to 30 by providing the correct answer

21. The process of refining grain structure and improving strength in metals is called.....
22. In hardening, the metal is heated above its critical temperature and then rapidly cooled inor
23. One major cause of accidents in workshops is.....
24. The primary purpose of heat treatment in metals is to improve their..... properties.
25. The primary function of a heat engine is to convert.....energy into mechanical energy.
26. In an internal combustion engine, the fuel-air mixture is ignited in a spark ignition engine using a.....
27. In a four-stroke engine, the four strokes are suction,..... power, and exhaust.
28. In an internal combustion engine, combustion occurs outside the.....
29. The process of.....involves heating materials to suitable temperatures to produce coalescence, with or without filler material.
30. A temporary joining process that involves mechanical fasteners like bolts, screws, and rivets is.....

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SECTION C (5 marks)

Indicate whether the following statement is TRUE/FALSE

31. The four-stroke cycle consists of intake, compression, power, and exhaust strokes.
32. Wrought iron is a Ferrous metal with a high carbon content.
33. The two main types of techniques employed for welding processes are forward techniques and backward techniques.
34. Stainless steel is a Non-Ferrous metal.
35. Thermoplastic can be reheated, reformed, or reused.

SECTION D (5 Marks)

For items 36-40, write appropriate responses in the spaces provided.

36. Which type of hammer is used for rounding rivet heads?
37. What do technicians use the outside calliper for?
38. What type of chisel is used for cutting grooves and keyways?
39. What problem does pinning in file create?
40. The tension on a blade of standard hacksaw is adjusted by turning the

SECTION E (20 Marks)

Answer only one (1) question in this section

41. a. Differentiate between material handling and material processing (4 Marks)
b. Sketch a file and indicate the following parts;
i. Tang
ii. Face
iii. Point
iv. Edge (4 Marks)
c. Give **two** reasons for studying safety precautions in the workshop? (2 Marks)
d. As a technical teacher, outline any three factors to consider when selecting tools for use [3 Marks]
e. i. List **two** striking and **two** holding tools [2 Marks]
ii. Give **three** care and maintenance of striking and holding tools [3 Marks]

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iii. Give **one** use each of the following;

f. Feeler gauge [1mark]

g. Outside callipers [1mark]

h. Crosscut Chisel [1mark]

i. Dot punch [1mark]

42. a) Discuss three (3) importance of workshop safety practices and personal protection equipment. [12 Marks]

b) Describe the working principle of a complete revolution of four stroke spark ignition engine [8 Marks].

43. A class of forty (40) Technical students have been given a practical task to perform at the metal workshop which has only five benches.

a. What should the technical instructor do to ensure that the students have sufficient space to perform the task? [8 Marks].

b. Explain two (2) measures that will ensure adequate lightening and ventilation at the workshop. [6 Marks].

c. State three (3) contributions of engineering to the society since nineteen century [4 Marks].

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