

GENERAL CERTIFICATE OF EDUCATION BOARD

Technical and Vocational Education Examination

JUNE 2022

INTERMEDIATE LEVEL

| | |
|----------------------------|-----------------------------------|
| Specialty Name and Acronym | AUTOMOBILE REPAIR MECHANICS (ARM) |
| Centre No. & Name | |
| Candidate No. | |
| Candidate Name | |

Mobile phones are NOT allowed in the examination room.

5130 MATERIAL TECHNOLOGY AND WORKSHOP PROCESSES 1: MULTIPLE CHOICE QUESTION PAPER

1 hour 30 minutes

INSTRUCTIONS TO CANDIDATES

Read the following instructions carefully before you start answering the questions in this paper. Make sure you have a soft HB pencil and an eraser for this examination.

1. USE A SOFT HB PENCIL THROUGHOUT THE EXAMINATION.
2. DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

Before the examination begins:

3. Check that this question booklet is headed "Intermediate Level – 5130 MATERIAL TECHNOLOGY AND WORKSHOP PROCESSES 1."
4. Insert the information required in the spaces above.
5. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

Candidate Name, Exam Session, Subject Code, Centre Number and Candidate Number.

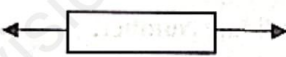
Take care that you do not erase or fold the answer sheet or make any marks on it other than those asked for in these instructions.

How to answer the questions in this examination:

6. Answer ALL the 50 questions in this Examination. All questions carry equal marks.
7. Each question has FOUR suggested answers: A, B, C and D. Decide which answer is correct. Find the number of the question on the Answer Sheet and draw a horizontal line across the letter to join the square brackets for the answer you have chosen.
For example, if C is your correct answer, mark C as shown below:
[A] [B] ☒ [C] [D]
8. Mark only one answer for each question. If you mark more than one answer, you will score a zero for that question. If you change your mind about an answer, erase the first mark carefully, then mark your new answer.
9. Avoid spending too much time on any one question. If you find a question difficult, move on to the next question. You can come back to this question later.
10. Do all rough work in this booklet, using, where necessary, the blank spaces in the question booklet.
11. You must not take this booklet and the answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination.

Turn Over

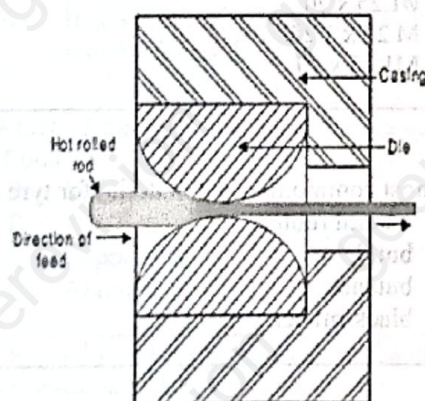
1. The material used for the brake shoe is
 - A Aluminium alloy.
 - B Cast steel.
 - C Cast iron.
 - D Asbestos.
2. Which of the following materials offers the least resistance to the flow of current?
 - A Mild steel.
 - B Copper.
 - C Water.
 - D High carbon steel.
3. Which one of the following has the largest percentage of free carbon?
 - A Mild steel.
 - B Cast iron.
 - C Alloy.
 - D High carbon steel.
4. The most commonly used flux in brazing is
 - A Borax.
 - B Rosin.
 - C Lead sulphide.
 - D Zinc chloride.
5. Which of the following material is commonly used as an electrical conductor?
 - A Brass.
 - B Aluminium.
 - C Copper.
 - D Duralium.
6. The force acting on the body below is known as



 - A Torsional force.
 - B Shear force.
 - C Tensile force.
 - D Compressive force.
7. What is an insulator?
 - A It is a material which electricity or heat passes through.
 - B It is a material which electricity or heat cannot pass through.
 - C It is a material which electricity or heat do pass easily.
 - D It is a material which electricity can pass with high speed.
8. Which of the following metals has a melting point of 660°C ?
 - A Lead.
 - B Tin.
 - C Copper.
 - D Aluminium.
9. The need for chromium as one of the constituents in the crankshaft is
 - A to increase ductility.
 - B to increase flexibility.
 - C to give room for turning.
 - D to increase hardenability.
10. Chips and swarf produced during turning should be removed with
 - A hands.
 - B an air blast.
 - C water.
 - D a brush.
11. Which one of these component does not require the use of a torque wrench?
 - A Cylinder head nuts.
 - B Top cylinder cover nuts.
 - C Crankcase studs and bolts.
 - D Road wheel nuts.
12. A tap is used for cutting
 - A external threads.
 - B internal threads.
 - C inner round threads.
 - D center punch.
13. The assembly of pieces with a rivet gives
 - A a temporal joint.
 - B a permanent joint.
 - C a rotary joint.
 - D a flexible joint.
14. An acetylene bottle should be used when it is
 - A inclined.
 - B lying on the ground.
 - C standing upright and fastened to a trolley.
 - D standing between the work piece and oxygen bottle.
15. Which welding process is most suitable for repairing vehicle bodies?
 - A Forge welding.
 - B Arc welding.
 - C Oxyacetylene welding.
 - D Resistance welding.
16. The piston diameter and skirt clearance should be measured on the
 - A minor or major axis of the skirt.
 - B minor or longitudinal axis of the skirt.
 - C minor or axial axis of the skirt.
 - D minor or transversal axis of the skirt.
17. In a four high rolling mill, there are four rolls out of which
 - A one is working roll and three are back up rolls.
 - B two are working rolls and two are back up rolls.
 - C three are working rolls and one is back up rolls.
 - D all of the four are working rolls.

18. The tolerance produced by shell moulding process of casting is _____.
- +0.05mm
 - $\pm 0.2\text{mm}$
 - +0.5mm
 - $\pm 1\text{mm}$
-
19. In a hot chamber die casting machine, the _____
- melting pot is separate from the machine.
 - melting pot is an integral part of the machine.
 - melting pot may have any location.
 - high temperature and pressure is used.
-
20. In submerged arc welding, an arc is produced between _____
- carbon electrode and the work piece.
 - metal electrode and the work piece.
 - bare metal electrode and the work piece.
 - two tungsten electrodes and the work piece.
-
21. The blank diameter used in thread rolling is _____
- equal to the minor diameter of the thread.
 - equal to the pitch diameter of the thread.
 - a little larger than the minor diameter of the thread.
 - a little larger than the pitch diameter of the thread.
-
22. Cold chisels are made by _____
- drawing.
 - rolling.
 - piercing.
 - forging.
-
23. The property of Sand Die which involves a great amount of steam and other gases is called _____
- collapsibility.
 - permeability.
 - cohesiveness.
 - adhesiveness.
-
24. The main ingredient in steel is _____
- Copper.
 - Bauxite.
 - Iron.
 - Lead.
-
25. In a heat treatment process which of the following quenching methods is the most gentle?
- Air quench.
 - Brine quench.
 - Oil quench.
 - Water quench.
-
26. What is the purpose of annealing?
- To ease machinability.
 - To decrease wear.
 - To increase wear.
 - To decrease machinability.
-
27. Ceramics materials can be used as _____
- moderators.
 - controls.
 - switches.
 - batteries.
-
28. Manganese is added to low carbon steel to _____
- make the steel tougher and harder.
 - raise its yield point.
 - make the steel ductile and of good bending qualities.
 - increase the flexibility.
-
29. The elastic stress and strain behaviour of rubber is _____
- linear.
 - non linear.
 - plastic.
 - no fixed relationship.
-
30. What reaction occurs during heating when one Solid phase results in another solid phase and a liquid phase?
- Eutectoid.
 - Peritectic.
 - Eutectic.
 - Peritectoid.
-
31. Hardness of a material enables _____
- abrasion.
 - penetration.
 - plastic deformation.
 - flexibility.
-
32. Which of the following is a ferrous alloy?
- Brass.
 - Aluminium alloy.
 - Cast steel.
 - Rubber.
-
33. Which of the following is not a method of case hardening steel?
- Exposing the steel in a carburized bath.
 - Surrounding it with carbonaceous material.
 - Immersing it in a carbon salt.
 - Immersing it in a cyanide salt.
-
34. A fine series screw thread of 20 mm diameter with a pitch of 1.25 mm is designated as _____
- $\phi 20 \times 1.25$.
 - $\phi 1.25 \times 20$.
 - M 20 x 1.25.
 - M 1.25 x 20.
-
35. The most commonly used material for tyre tubes is _____
- natural rubber.
 - butyl.
 - butane.
 - black rubber.
-

36. The process of rendering steel as ductile as possible is known as
 A Normalizing.
 B Tempering.
 C Hardening.
 D Annealing.
37. Which hardness test uses a steel-ball indenter to measure the penetration into a metal under a specified load?
 A Brinell hardness test.
 B Webster hardness test.
 C Rockwell hardness test.
 D Vickers hardness test.
38. Which of the following materials is generally used for a Car's body frame?
 A Castiron.
 B High carbonsteel.
 C Mildsteel.
 D Medium carbonsteel.
39. Which hardness testing method is based on the diameter of an indenter?
 A Brinell.
 B Moh.
 C Rockwell.
 D Knoop.
40. Some automobile parts that undergo nitriding are
 A plain bearings, push rods and bearings.
 B connecting rods, rockers and gaskets.
 C flywheels, push rods and tappers.
 D shafts, gears and valves.
41. Which of the following is not a forging tool?
 A A hack saw.
 B Tongs.
 C A punch.
 D A hot chisel.
42. Why do we heat treat a forged part?
 A To soften the part.
 B To reform the part.
 C To relief internal stresses.
 D To strengthen the part.
43. The manufacturing process shown in the figure below refers to



- A Forging.
 B Cold rolling.
 C Extrusion.
 D Wire drawing.
44. Which of the following is an allied process?
 A Carbon arc welding.
 B Pressure gas welding.
 C Braze welding.
 D Oxy-acetylene welding.
45. Which of the following tool is used to fasten metals with steel nail?
 A A rivet pliers.
 B A pliers.
 C A punch.
 D A stapler.
46. To cut sheet metal at 45 or 90 degrees, the machine used is a
 A notching machine.
 B drilling machine.
 C bending machine.
 D welding machine.
47. Steel is made by the combination of carbon and
 A Wood.
 B Aluminium.
 C Rubber.
 D Iron.
48. Which of the following machine is used to hold a material firmly during cutting and shaping operations?
 A Bending machine.
 B Clamping machine.
 C Notching machine.
 D Bench vice.
49. A drill bit used to cut circular holes on metal sheets is made of
 A High carbon steel.
 B Pure iron.
 C Wood.
 D Rubber.
50. Which of the following welding process uses non-consumable electrodes?
 A TIG welding.
 B MIG welding.
 C Manual arc welding.
 D Submerged arc welding.

STOP

NOW GO BACK AND CHECK YOUR WORK

Turn over