



MINISTERE DES ENSEIGNEMENTS SECONDAIRES

CELLULE D'APPUI A L'ACTION PEDAGOGIQUE
ANTENNE REGIONALE DU NORD OUEST

BP 2183 MANKON BAMENDA
TEL 233 362 209
Email : trubamenda@yahoo.co.uk

MINISTRY OF SECONDARY EDUCATION

TEACHERS' RESOURCE UNIT
REGIONAL BRANCH FOR THE NORTH WEST

P.O. BOX: 2183 MANKON BAMENDA
TEL 233 362 209
Email : trubamenda@yahoo.co.uk

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The Teachers' Resource Unit and the Regional Inspectorate of Pedagogy in charge of Industrial Techniques AMTA-NW	SUBJECT CODE NUMBER 5130	PAPER NUMBER 1
TECHNICAL VOCATIONAL EDUCATION INTERMEDIATE LEVEL REGIONAL MOCK EXAMINATION	SPECIALTY AUTOMOBILE REPAIRS MECHANICS (ARM)	
CANDIDATE NAME: CANDIDATE NUMBER: CENTRE NUMBER: INDUSTRIAL TECHNIQUES	SUBJECT TITLE Materials Technology and Workshop Processes	

Time Allowed: One and a half hours
INSTRUCTIONS TO CANDIDATES:

Mobile phones are **NOT ALLOWED** in the examination room.

1. USE A SOFT HB PENCIL THROUGHOUT THIS 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 "Advanced Level 5130 Code and Subject title Materials Technology and Workshop Processes Paper 1".
4. Insert the information required in the spaces above.
5. Without opening the booklet, pull out the answer sheet carefully from inside the front cover of this booklet. Take care that you do not crease or fold the answer sheet or make any marks on it other than those asked for in these instructions.
6. Insert the information required in the spaces provided on the answer sheet using your HB pencil:

Candidate Name, Centre Number, Candidate Number, Subject Code Number, and Paper number

How to answer questions in this examination:

7. Answer ALL the 50 questions in this examination. All questions carry equal marks.
8. Non-programmable calculators are allowed.
9. For each question there are 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]
10. Mark only one answer for each question. If you mark more than one answer, you will score zero for that question. If you change your mind about an answer, erase the first mark carefully, and then mark your new answer.
11. Avoid spending much time on any question. If you find a question difficult, move to the next. You can come back to the question later.
12. Do all rough work in this booklet using, where necessary, the blank spaces in the question booklet.
13. You must not take this booklet and answer sheet out of the examination room. All question booklets and answer sheets will be collected at the end of the examination

1. The strength of iron increases dramatically as its
 - A. melting point is increased
 - B. ductility is increased
 - C. carbon content is increased
 - D. carbon content is decreased
2. The temperature at which a material changes from a liquid to a solid state is called its.
 - A. freezing point
 - B. melting point
 - C. fusing point
 - D. transition point
3. When two or more metals are joint together to improve their properties, they are said to be
 - A. annealed
 - B. forged
 - C. hardened
 - D. alloyed
4. To protect eyes, you have to wear
 - A. safety shoe
 - B. overall
 - C. safety glasses
 - D. helmet
5. Engine piston dudgeon pins while in operation are subjected to
 - A. tensile stresses
 - B. compressive stresses
 - C. shear stresses
 - D. shear strains
6. In the process of refining pig iron to obtain steel, the element that determines the grade of the steel being produced is its
 - A. iron content
 - B. silicone content
 - C. manganese and phosphorus contents
 - D. carbon content
7. The process of decreasing the cross section of a bar and increasing its length is called
 - A. drawn down
 - B. Peening
 - C. upsetting
 - D. spinning
8. Neutralising the acidic nature of the material is known as
 - A. chemical composition
 - B. chemical composition
 - C. chemical equilibrium
 - D. corrosion resistance
9. The ability of a metal to resist being fractured by opposing forces not acting on a straight line is called its
 - A. shear strength
 - B. tensile strength
 - C. compressive strength
 - D. hardness strength
10. Some typical examples of automobile parts that are produced from composite materials are
 - A. camshaft, flywheel, engine hoods, leaf springs, floors, roofs and side bars
 - B. drive belts, timing chains, drive shafts, seats, floors, roofs and side bars
 - C. engine hoods, bumpers, drive shafts, leaf springs, floors, roofs, unibody and monocoque structure
 - D. seat belts, engine hoods, flywheels, springs, floors, batteries, drive axles
11. Pig iron is the name given to, the
 - A. Iron scrub
 - B. Product of blast furnace made by reduction of iron ore
 - C. Iron containing huge quantities of carbon
 - D. Iron in molten form in the ladles
12. PPE stands for
 - A. People Preparing for Examination
 - B. Personal prevention Exercises
 - C. Personal Protective Equipment
 - D. Personal Part time Exercise
13. Normalizing is a heat treatment process whose objectives are to
 - A. harden the steel and reduce its tensile strength
 - B. increase the toughness and ductility of the steel
 - C. soften the steel, refine grain structure, improve on its machinability after forging or rolling
 - D. refine grain size and render it harder
14. Cutting fluids are used while drilling to
 - A. lubricate the work
 - B. improve the cutting action and prevent over heating of the twist drill
 - C. help in taking metal chips of the work
 - D. prevent the drill from being stuck in the work
15. Which of the following elements does not impact hardness to steel?
 - A. Chromium
 - B. Nickel
 - C. Copper
 - D. silicon
16. Manganese in steel increases its
 - A. tensile strength
 - B. hardness
 - C. ductility
 - D. malleability
17. Cutting of a flat sheet to the desired shape is called
 - A. shearing
 - B. piercing
 - C. punching
 - D. blanking
18. A hacksaw blade cuts on the
 - A. forward stroke
 - B. return stroke
 - C. both the forward and return strokes
 - D. direction of force
19. Forming chambers around the edges of drilled holes in order to accommodate the conical heads of countersunk head screw is
 - A. countersinking
 - B. counter boring
 - C. boring
 - D. reaming

20. The main objectives of industrial safety is to eliminate accident by
 - A. following the safety principle
 - B. causing injury, loss of life, damage to machine and materials
 - C. increasing production and standard of leaving of the workers
 - D. promoting workers insurance
21. How does accident affect the owner indirectly?
 - A. Cost of compensation paid to the workers
 - B. Cost of money paid for treatment
 - C. Cost of damage to tools and equipment
 - D. Time lost and delay in production
22. The input products to the blast furnace are
 - A. coke, iron ore and pig iron
 - B. limestone, coke and pig iron
 - C. limestone, coke and iron ore
 - D. limestone, pig iron and iron ore
23. Deformation that occurs due to stress over a period of time is known as
 - A. ear resistance
 - B. fatigue
 - C. creep
 - D. fracture
24. Brass and bronze are welded by:
 - A. neutral flame
 - B. oxidising flame
 - C. oxidising flame
 - D. nucleation flame
25. What will be the cutting speed in a drilling operation with 32mm as drill diameter and 200rpm for drill spindle?
 - A. 346 m/min
 - B. 312 m/min
 - C. 20 m/min
 - D. 23 m/min
26. Which of the following materials is best in electrical conduction?
 - A. Copper
 - B. Aluminium
 - C. Steel
 - D. Nickel
27. A file with 20 teeth in 25 mm is called
 - A. rough file
 - B. bastard file
 - C. smooth file
 - D. second cut file
28. When more volume of acetylene and less volume of oxygen is supplied, we obtain a/an
 - A. neutral flame
 - B. oxidising flame
 - C. carburising flame
 - D. colourful flame
29. External thread cuttings are done using a
 - A. knife
 - B. tap
 - C. disc
 - D. saw
30. In TIG arc welding, the welding zone is shielded by an atmosphere of
 - A. helium gas
 - B. argon gas
 - C. helium or argon
 - D. helium and argon

31. Which of the following welding methods use a pool of molten metal?
 - A. Carbon arc welding
 - B. Submerged arc welding
 - C. Tig arc welding
 - D. Mig arc welding
32. One advantage of wooden patterns is
 - A. light in weight
 - B. tends to warp
 - C. easy to file and fit
 - D. heavier than cast iron
33. The process of joining two similar or dissimilar metals by fusion is
 - A. riveting
 - B. soldering
 - C. welding
 - D. bolting
34. Which of the materials listed below is best for Diesel engine piston?
 - A. High speed steel
 - B. Low alloy steel
 - C. Aluminium alloy
 - D. Pig iron
35. The difference between the upper limit and lower limit of a dimension is called
 - A. tolerance
 - B. normal size
 - C. basic size
 - D. actual size
36. Galvanizing is a
 - A. zinc diffusion process
 - B. process of cutting zinc by hot dipping
 - C. process used for making thin phosphate coating on steel
 - D. process of heat treatment
37. The greatest stress that a material can endure without taking a permanent set is called
 - A. yield point
 - B. proportional limit
 - C. plastic limit
 - D. elastic limit
38. In automobile industries, the most widely used resistance welding is the
 - A. seam welding
 - B. flash butt welding
 - C. Spot Welding
 - D. high frequency induction welding
39. Bronze is a non-ferrous metal made from an alloy of
 - A. aluminium and iron
 - B. copper and brass
 - C. copper and tin
 - D. brass and tin
40. Grey cast iron can be made from all of the following furnaces EXCEPT
 - A. cupola furnace
 - B. electric arc furnace
 - C. air furnace
 - D. electrical furnace

TURN OVER 3/4

41. The property that helps a molten metal in the production of sound casting with fewer defects is called

- A. viscosity
- B. fundability
- C. viscosity index
- D. liquidity

42. Alloying chromium to steel is to improve on the

- A. hardness, wear resistance and shock
- B. corrosion resistance, tensile strength, hardness and wear resistance
- C. tensile strength and elastic limit
- D. strength and toughness

43. Which of the following is a cold working process?

- A. Stretch forming, bending and squeezing
- B. Forming, rolling and extrusion
- C. Cold forging and rolling
- D. Wire drawing and rolling

44. To improve the magnetic properties of steel

- A. tungsten
- B. silicon
- C. manganese
- D. Vanadium

45. vanadium The heat treatment which soften steel, relieve internal stresses, improve machinability, increase ductility and toughness is

- A. case hardening
- B. tempering
- C. normalizing
- D. annealing

6. Flux is used in soldering to remove

- A. oxides and other surface compounds
- B. internal stress of the metal
- C. oxide and stress
- D. heat rapidly from the surface

47. A 200N force acts over a distance of 5m for a time of 4 sec. This represents a power of

- A. 10 W
- B. 250 W
- C. 100 W
- D. 400 W

48. An engine having a mass of 200kg is lifted vertically through a distance of 2m. What amount of work does this represent? (take $g=10\text{m/s}^2$)

- A. 40 J
- B. 400 J
- C. 1 KJ
- D. 4 KJ

49. The choice of materials for engineering purposes depends on the:

- A. strength of the material
- B. weight of the material
- C. properties needed for meeting the functional requirements
- D. availability of the material

50. The mechanical properties of a material which retains the deformation produced under load permanently is

- A. ductility
- B. elasticity
- C. plasticity
- D. hardness

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