

G9 ECZ D&T 608/1 2020 SPECIMEN SOLUTIONS

Grade 9 ECZ Design and Technology 608/1 Paper 1 (Theory) 2020 Specimen

2 hours 30 minutes | Section A: MCQ | Section B: structured | Section C: Parts I-III

34) is a pure Graphic Communication design/drawing task (design a symbol or safety signs, with rendering) and is marked NOT ANSWERABLE



EXAMINATIONS COUNCIL OF ZAMBIA

JUNIOR SECONDARY SCHOOL LEAVING EXAMINATION (GRADE 9) – 2020

Design and Technology 608/1

Paper 1 (Theory)

Specimen

(INTERNAL & EXTERNAL CANDIDATES)

Time: 2 hours 30 Minutes

Marks: 155

Instructions to candidates

- 1 Pull out the **Answer Booklet** from the question paper.
- 2 Write your **Name, Examination Number, School/Centre and Code** on the first page of the Answer Booklet.
- 3 There are **three (3)** sections in this question paper: **Section A, B and C**.
- 4 Answer all questions on sections **A and B**.
- 5 Section **C** has parts: **I, II and III**, part **I** is compulsory.
- 6 Write all your answers in the Answer booklet provided

Information for candidates

Cell phones are not allowed in the examination room.

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DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

SECTION A: [30 marks]

Multiple choice questions

Answer all questions from this Section. Write all your answers in the Answer Booklet provided. Indicate the best answer from the four (4) choices that are given A, B, C, and D with the letter (X).

- 1 Identify the statement that is **not** a workplace and safety issue.
- A Safe storage and use of materials, chemicals finishes and solvents.
 - B Safe storage and use of tools and equipment.
 - C Selling of the finished product in the work room.
 - D Wearing of protective clothing in the workplace.
- 2 **Figure 1** below shows a block used as a teaching aid by our Design and Technology teacher. Identify the correct end elevation.

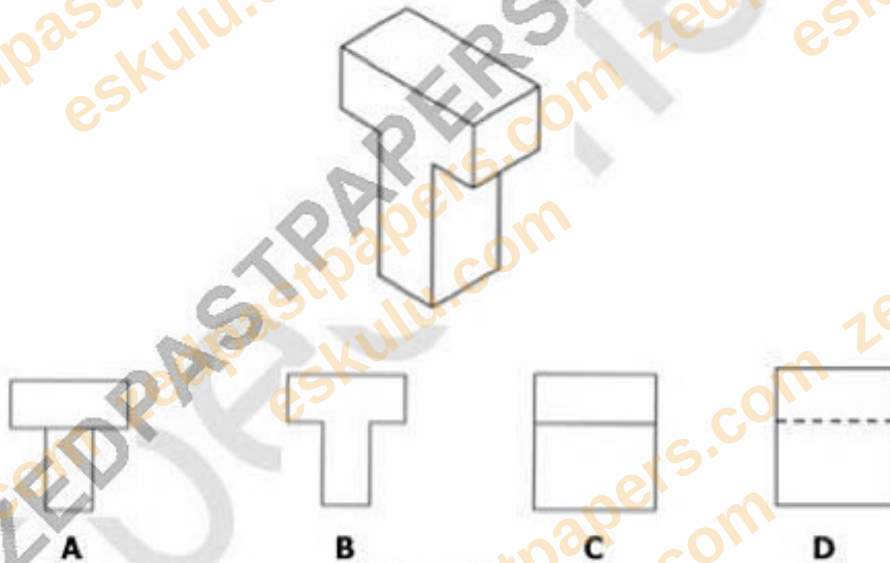


Figure 1

- 3 What is the general term given to houses, bicycles and aircrafts?
- A Equipment
 - B Infrastructure
 - C Mechanics
 - D Structures
- 4 The most suitable tool for removing bent nails is the ...
- A pincers.
 - B pliers.
 - C screwdriver.
 - D waddington hammer.

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- 5 Part of the sequence of the design process is shown below. Which of the following steps is the missing stage in the sequence?



- A Development
 B Investigation
 C Making
 D Testing
- 6 The drawing in **Figure 2** shows a key holder cut out of a 2mm thick mild steel sheet metal.



Figure 2

Which file would you use to finish off the curved part marked X.

- A Flat file
 B Half round file
 C Hand file
 D Triangular file
- 7 There are three main reasons why it is necessary for us to work on materials. Identify **one** reason which is **not** correct. To change the ...
- A appearance of the material.
 B moulding of the material.
 C properties of the material.
 D shape of the material.
- 8 The tools listed below are driving tools except ...
- A hammers.
 B screw drivers.
 C spanners.
 D vices.

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- 9 Correctly seasoned timber has the following **except** increased ...
 A moisture.
 B resistance.
 C stability.
 D strength.
- 10 In design process, the stage where ideas are made into an artefact is called ...
 A evaluation.
 B investigation.
 C realisation.
 D solution.
- 11 **Figure 3** below shows three sections of files. Select the correct set showing the names of the files correctly.



Figure 3

- A Half round file, triangular file, square file.
 B Round file, triangular file, square file.
 C Semi-round file, three square file, square file.
 D Three triangle file, semi round file, square file.
- 12 Storage area for different metals must **not** be ...
 A damp.
 B dry.
 C dusty.
 D sunny.
- 13 Dimensions or measurements are required to be placed on any drawings as shown in **Figure 4** below:

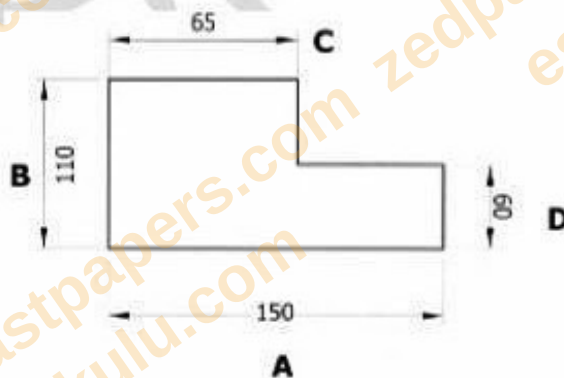


Figure 4

Which side of the drawing is correctly dimensioned?

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- 14** The method of enhancing a drawing to show the type of materials to be used is known as ...
- A** colouring.
 - B** line shading.
 - C** texturing.
 - D** tone shading.
- 15** Choose the suitable use of copper from the following.
It can be used ...
- A** for making battery terminals.
 - B** for making electrical wires.
 - C** when galvanising.
 - D** when manufacturing.
- 16** What do we refer to as curing of bricks?
- A** Drying of bricks
 - B** Making of bricks
 - C** Stacking of bricks
 - D** Storing of bricks
- 17** **Figure 5** below shows two PVC pipes to be joined together at **A**, which of the following glues would be appropriate to use?

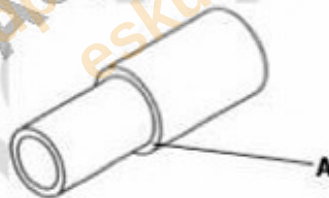


Figure 5

- A** Contact adhesive.
 - B** Epoxy adhesive.
 - C** PVC adhesive.
 - D** synthetic wood adhesive.
- 18** The tool that is used to check that the surfaces are at right angles to each other is known as the ...
- A** a carpenter's or engineer's try square.
 - B** a steel rule
 - C** a tee square
 - D** pair of compasses or dividers.

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- 19 In addition to beauty, colours are also used to communicate. Which of the following communicates "danger"?

A Blue
B Green
C Red
D Yellow

- 20 **Figure 6** shows different drawings of a vee- block. Choose **one** drawing in isometric.

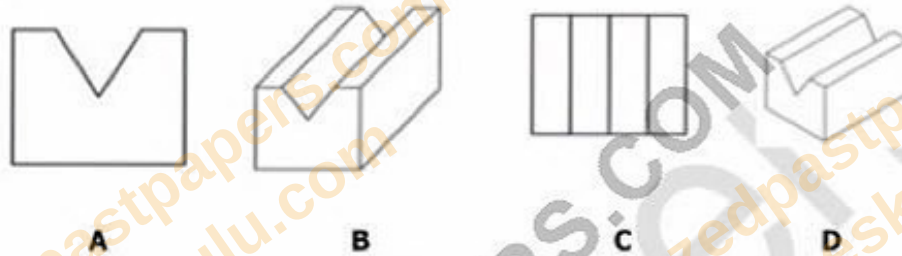


Figure 6

- 21 When a formed thermoplastic is reheated, it returns to its original shape. This is called ...

A deformation.
B elasticity.
C formation.
D plastic memory.

- 22 **Figure 7** shows a project to be made in the design and technology workshop. How would you bend the bracket to its shape?

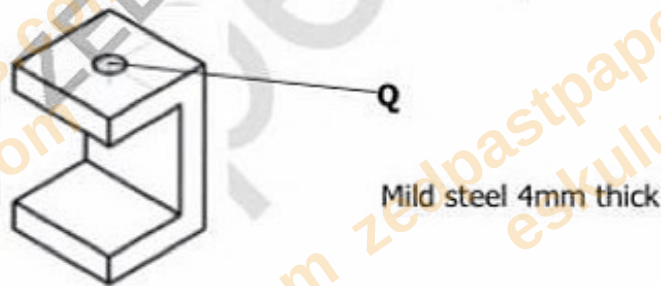


Figure 7

A Using heat and a former.
B Using the bench vice.
C using the pin vice.
D using the tongs.

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- 23 With reference to **Figure 7** in Q22, identify the tool to be used for cutting the internal threads in the hole labelled **Q**.

A Die
B Drill
C Screw
D Tap

- 24 **Figure 8** shows a component made from plastic. Which type of plastic could be used?



Figure 8

A Acrylic
B Nylon
C Polythene
D PVC

- 25 The clogging of file teeth with filings is referred to as ...

A choking.
B filing.
C fillings.
D pinning.

- 26 Which is the safest method of disposing off metals and plastics?

A Burning
B Melting.
C Recycling.
D Throwing

- 27 The following are the main parts of Business Plan, **except** ...

A equipment.
B logo on the cover.
C profit.
D start-up capital.

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- 28 A line that touches a circle on one point of its circumference is called ...

A chord.
B radius.
C sector.
D tangent.

- 29 State the type of force illustrated by the arrows shown in figure 9 below.

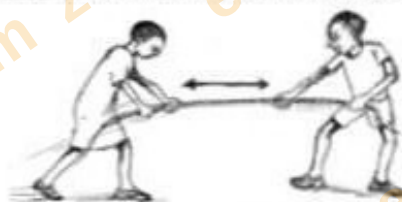


Figure 9

- A Bending force
B Compression force
C Tension force
D Torsion force
- 30 A competent entrepreneur has the following characteristics, except ...
A commitment.
B creativity.
C laissez-faire.
D adaptability.

[Total 30 marks]

SECTION B [30 marks]

Answer all questions

Write your answers in the spaces provided in the **Answer Booklet**.

- 31 (a) **Figure 10** below shows one of the tools commonly used in the Design and Technology workshop.

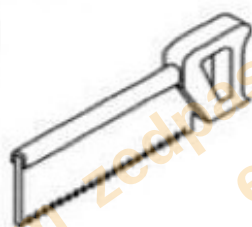


Figure 10

- (i) Name the tool. [1]
(ii) To which class of tools does it belong? [1]
(iii) Mention one similar tool that can be used for cutting plastics. [1]

- (b) (i) The tool in **Figure 11** below is used for ... [1]



Figure 11

- (ii) ... is a name given to a hole that does not go through from one end to another of a workpiece. [1]
- (iii) When you are working in an area where there is air pollution, recommend the suitable equipment to use to protect yourself from inhaling the poisonous gas(es). [1]
- (c) Study the table and match the tool with its correct function.

Tool	Functions
(i) Plane	Cutting internal threads
(ii) Bottoming tap	Used where there is a wall
(iii) Try square	Smoothing wood
(iv) Masonry nail	Checking angles at 90°

[4]

- (d) Identify the parts labelled X, Y and Z in **Figure 12** below:



Figure 12

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[3]

- (e) The diagram in **Figure 13** below shows an electric circuit. Name the parts labelled **A**, **B**, **C** and **D**. [5]

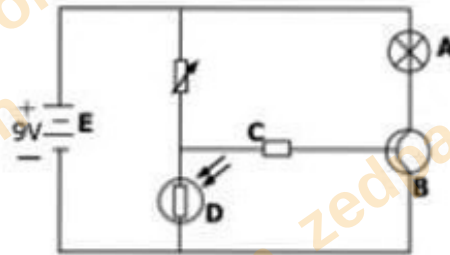


Figure 13

- (f) Complete the table below by filling in the correct information. [4]

	Source	Type of Energy
(i)	Water	
(ii)		Chemical
(iii)	Coal	
(iv)		Solar

- (g) Categorise the following materials according to their specific groups.

- (i) High carbon steel [1]
 (ii) Acrylic [1]
 (iii) Medium Density Fibreboard (MDF) [1]
 (iv) Brass [1]

- (h) Mention

- (i) **Two** temporary joints. [2]
 (ii) Any **two** types of adhesives. [2]

Total [30 marks]

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SECTION C [95 marks]

Part I

Compulsory

32



Figure 14

- (a) The situation shown in **Figure 14** is obtaining in your bedroom.
- Identify the problem from the given situation. [2]
 - Come up with a design brief from the problem stated in (a) (i). [3]
 - From your design brief, write **five** specifications. [5]
 - Sketch freehand a pictorial drawing of the possible solution. [12]
- (b) (i) Suggest **two** possible materials you would use for your possible solution. [2]
- (ii) Give **two** reasons for each of the materials you have chosen. zedpastpapers.com [4]
- (iii) What safety measures did you consider to make the possible solution in (b) (i) safe for use? [2]

[Total:30 marks]

Part II

Choose one question

33 Either (a) The Home Economics Department would like the Design and Technology section to make some tea trays for them.

- (i)** Complete the cutting list that your teacher has started for you. [14]

Part	Qty	L	W	T	Material
Side rails					
					Pine
Base					

- (ii)** Explain what is involved in the following stages of material preparation and the tools used.

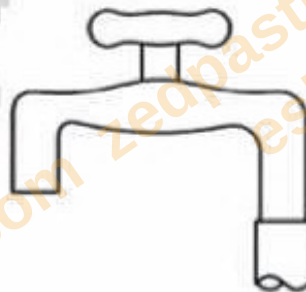
- 1 Measuring [6]
- 2 Marking out [6]

- (iii)** Sketch a freehand pictorial drawing of the tea tray. The sketch must be of good proportion, neat and include rendering. [6]

- (iv)** Name a finish that could be applied on the tray and give the reasons for choosing that type. [4]

[Total: 30 marks]

Or (b) (i) The drawing in **Figure 15** shows a garden tap.



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Figure 15

- 1 Name a suitable material that can be used to make a garden tap. [1]
- 2 Give **two** properties of the material you have mentioned in **a (i)**. [2]
- 3 Mention **one** type of bond in bricklaying. [1]

- (ii) 1 Describe the meaning of the following terms in connection with heat effect on plastics:
- Plastic memory [4]
 - Bending [4]
 - Press forming [4]
 - Embedding [4]
- 2 Give **five** effects of plastics on the environment. [5]
- 3 Suggest the best ways of disposing off plastics. [5]

[Total: 30 marks]

Part III**Graphic Communication**

Choose one questions.

- 34 Either (a)** A group of Grade 9 School leavers have formed a company to be designing moulders used when making blocks and bricks. The group wants to make a symbol for the company that should have a combination of at least two of the following plane figures.
- A circle, ellipse, triangle, quadrilateral or a polygon.

The symbol will be used on the letter heads of the company.

- (i) Design a symbol that meets the requirements. [15]
- (ii) What name would you give to the company? [2]
- (iii) Render your drawings and give **two** reasons for rendering. [10]
- (iv) Use free hand sketch to show the surface development of rack open from behind. [8]

[Total: 35 marks]

- Or (b)** A swimming pool has just been constructed at a new school. The school has asked you to design some signs that should graphically give the following messages:

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- (i) Do not push others in the pool. [15]
- (ii) Keep food away from the pool. [10]
- (iii) Do not smoke [10]

[Total: 35 marks]

Question 1. Identify the statement that is not a workplace and safety issue. (A) Safe storage and use of materials, chemicals finishes and solvents (B) Safe storage and use of tools and equipment (C) Selling of the finished product in the work room (D) Wearing of protective clothing in the workplace

Answer: C -- selling a finished product is a business matter, not a workplace safety issue.

Question 2. Figure 1 shows a block used as a teaching aid, an upright T-shaped block. Identify the correct end elevation.

Answer: The end elevation is the T-shaped view seen from the end/side of the block, matching option B (the T-shaped outline), since the end elevation shows the cross-sectional T-profile of the block.

Question 3. What is the general term given to houses, bicycles and aircrafts? (A) Equipment (B) Infrastructure (C) Mechanics (D) Structures

Answer: D -- houses, bicycles and aircraft are all examples of structures.

Question 4. The most suitable tool for removing bent nails is the ... (A) pincers (B) pliers (C) screwdriver (D) waddington hammer

Answer: A -- pincers are the most suitable tool for removing (pulling out) bent nails.

Question 5. Part of the sequence of the design process is shown: Brief -> [missing stage] -> Ideas. Which of the following steps is the missing stage in the sequence? (A) Development (B) Investigation (C) Making (D) Testing

Answer: B -- after the Brief, the designer carries out Investigation (research) before generating Ideas.

Question 6. The drawing in Figure 2 shows a key holder cut out of a 2mm thick mild steel sheet metal. Which file would you use to finish off the curved part marked X? (A) Flat file (B) Half round file (C) Hand file (D) Triangular file

Answer: B -- a half round file's curved face is suited to finishing concave/curved edges like part X.

Question 7. There are three main reasons why it is necessary for us to work on materials. Identify one reason which is not correct. To change the ... (A) appearance of the material (B) moulding of the material (C) properties of the material (D) shape of the material

Answer: B -- 'moulding' is not one of the three standard reasons (appearance, properties, shape); it is not itself a reason to work materials.

Question 8. The tools listed below are driving tools except ... (A) hammers (B) screw drivers (C) spanners (D) vices

Answer: D -- vices are holding/clamping tools, not driving tools; hammers, screwdrivers and spanners are all used to drive/turn fasteners.

Question 9. Correctly seasoned timber has the following except increased ... (A) moisture (B) resistance (C) stability (D) strength

Answer: A -- correctly seasoned (dried) timber has reduced, not increased, moisture content.

Question 10. In design process, the stage where ideas are made into an artefact is called ... (A) evaluation (B) investigation (C) realisation (D) solution

Answer: C -- realisation is the stage where the chosen idea is actually made into the artefact.

Question 11. Figure 3 below shows three sections of files. Select the correct set showing the names of the files correctly (a semi-circular/half-round section, a triangular section, a square section). (A) Half round file, triangular file, square file (B) Round file, triangular file, square file (C) Semi-round file, three square file, square file (D) Three triangle file, semi round file, square file

Answer: A -- Half round file, triangular file, square file correctly names the three cross-sections shown.

Question 12. Storage area for different metals must not be ... (A) damp (B) dry (C) dusty (D) sunny

Answer: A -- metal storage areas must not be damp, since dampness causes rusting/corrosion.

Question 13. Dimensions or measurements are required to be placed on any drawings as shown in Figure 4 (an L-shaped block with dimension lines 65, 110, 150, 90 along sides A, B, C, D). Which side of the drawing is correctly dimensioned?

Answer: Side A (the overall 150 dimension line placed below/outside the outline, clear of the object and with proper extension/dimension lines) is correctly dimensioned, since dimensions must be placed outside the outline of the object with clear extension lines, unlike a dimension crowded onto or crossing the object.

Question 14. The method of enhancing a drawing to show the type of materials to be used is known as ... (A) colouring (B) line shading (C) texturing (D) tone shading

Answer: C -- texturing is used to enhance a drawing to indicate the type of material.

Question 15. Choose the suitable use of copper from the following. It can be used ... (A) for making battery terminals (B) for making electrical wires (C) when galvanising (D) when manufacturing

Answer: B -- copper's excellent electrical conductivity makes it suitable for electrical wires.

Question 16. What do we refer to as curing of bricks? (A) Drying of bricks (B) Making of bricks (C) Stacking of bricks (D) Storing of bricks

Answer: A -- curing of bricks refers to the controlled drying/hardening process of bricks.

Question 17. Figure 5 below shows two PVC pipes to be joined together at A. Which of the following glues would be appropriate to use? (A) Contact adhesive (B) Epoxy adhesive (C) PVC adhesive (D) synthetic wood adhesive

Answer: C -- PVC adhesive (PVC solvent cement) is the correct glue for joining PVC pipes.

Question 18. The tool that is used to check that the surfaces are at right angles to each other is known as the ... (A) a carpenter's or engineer's try square (B) a steel rule (C) a tee square (D) pair of compasses or dividers

Answer: A -- a try square (carpenter's or engineer's) checks that surfaces are at right angles.

Question 19. In addition to beauty, colours are also used to communicate. Which of the following communicates "danger"? (A) Blue (B) Green (C) Red (D) Yellow

Answer: C -- Red universally communicates danger.

Question 20. Figure 6 shows different drawings of a vee-block. Choose one drawing in isometric.

Answer: B -- the 3-D pictorial view drawn at equal angles (the solid block with the vee-groove shown as a 3-D pictorial shape) is the isometric drawing, distinct from the front view, the sectional/hatched view, and the side view shown in the other options.

Question 21. When a formed thermoplastic is reheated, it returns to its original shape. This is called ... (A) deformation (B) elasticity (C) formation (D) plastic memory

Answer: D -- this reheating-and-returning-to-original-shape behaviour is called plastic memory.

Question 22. Figure 7 shows a project (a bracket, mild steel 4mm thick) to be made in the design and technology workshop, with a hole marked Q. How would you bend the bracket to its shape? (A) Using heat and a former (B) Using the bench vice (C) using the pin vice (D) using the tongs

Answer: A -- bending a mild-steel bracket to shape is done using heat and a former.

Question 23. With reference to Figure 7 in Q22, identify the tool to be used for cutting the internal threads in the hole labelled Q. (A) Die (B) Drill (C) Screw (D) Tap

Answer: D -- a tap is used to cut internal threads in a hole.

Question 24. Figure 8 shows a component made from plastic (a compact disc/CD). Which type of plastic could be used? (A) Acrylic (B) Nylon (C) Polythene (D) PVC

Answer: A -- Acrylic (polycarbonate-type clear rigid plastic) is used for making CDs; of the given options, Acrylic is the suitable rigid, clear plastic.

Question 25. The clogging of file teeth with filings is referred to as ... (A) choking (B) filing (C) fillings (D) pinning

Answer: D -- the clogging of file teeth with filings is called pinning.

Question 26. Which is the safest method of disposing off metals and plastics? (A) Burning (B) Melting (C) Recycling (D) Throwing

Answer: C -- recycling is the safest and most environmentally responsible way of disposing of metals and plastics.

Question 27. The following are the main parts of Business Plan, except ... (A) equipment (B) logo on the cover (C) profit (D) start-up capital

Answer: B -- a logo on the cover is decorative, not a core financial/operational part of a business plan (unlike equipment, profit, and start-up capital).

Question 28. A line that touches a circle on one point of its circumference is called ... (A) chord (B) radius (C) sector (D) tangent

Answer: D -- a line touching a circle at only one point is a tangent.

Question 29. State the type of force illustrated by the arrows shown in Figure 9 below (two people pulling a rope in opposite directions). (A) Bending force (B) Compression force (C) Tension force (D) Torsion force

Answer: C -- pulling a rope from opposite ends stretches it, which is a tension force.

Question 30. A competent entrepreneur has the following characteristics, except ... (A) commitment (B) creativity (C) laissez-faire (D) adaptability

Answer: C -- laissez-faire (a hands-off, uninvolved attitude) is not a characteristic of a competent, actively-engaged entrepreneur.

Question Section B - Q31. (a) Figure 10 shows one of the tools commonly used in the Design and Technology workroom (a hand saw). Name the tool. (b)(i) The tool in Figure 11 (a wood chisel) is used for ... (ii) ... is a name given to a hole that does not go through from one end to another of a workpiece. (iii) When you are working in an area where there is air pollution, recommend the suitable equipment to use to protect yourself from inhaling the poisonous gas(es). (c) Study the table and match the tool with its correct function: (i) Plane (ii) Bottoming tap (iii) Try square (iv) Masonry nail -- against: cutting internal threads / used where there is a wall / smoothening wood / checking angles at 90 degrees. (d) Identify the parts labelled X, Y and Z in Figure 12 (a lever/see-saw diagram: X = downward force arrow, Y = triangular support, Z = load block). (e) The diagram in Figure 13 shows an electric circuit with a 9V battery E, and parts A, B, C, D. Name parts A, B, C and D. (f) Complete the table by filling in the correct information matching energy sources to their type of energy (Water/?, ?/Chemical, Coal/?, ?/Solar). (g) Categorise the following materials according to their specific groups: (i) High carbon steel (ii) Acrylic (iii) Medium Density Fibreboard (MDF) (iv) Brass. (h) Mention: (i) Two temporary joints. (ii) Any two types of adhesives.

(a)

Answer: The tool shown in Figure 10 is a hand saw (cross-cut/panel saw). It belongs to the class of cutting tools. A similar tool that can be used for cutting plastics is a hacksaw (or a fine-toothed panel saw).

(b)(i)

Answer: The tool in Figure 11 (a wood chisel) is used for cutting/paring/shaping wood, removing waste wood to form joints, grooves, and recesses.

(b)(ii)

Answer: A blind hole is a hole that does not go through from one end to another of a workpiece.

(b)(iii)

Answer: A respirator/dust/gas mask should be used to protect yourself from inhaling poisonous gases in a polluted work area.

(c)

Answer: (i) Plane -- Smoothing wood. (ii) Bottoming tap -- Cutting internal threads. (iii) Try square -- Checking angles at 90 degrees. (iv) Masonry nail -- Used where there is a wall.

(d)

Answer: X -- the applied force (effort/load being pushed down); Y -- the fulcrum/pivot (the triangular support); Z -- the load (the resistance/weight being lifted).

(e)

Answer: A -- the lamp/bulb; B -- the buzzer/motor (rounded component connected in the circuit); C -- the resistor; D -- the light-dependent resistor (LDR)/photodiode sensor (the light-sensitive component shown with arrows pointing toward it).

(f)

Answer: (i) Water -- Kinetic (mechanical) energy. (ii) Battery/food -- Chemical energy. (iii) Coal -- Heat energy. (iv) Sun -- Solar energy.

(g)

Answer: (i) High carbon steel -- Ferrous metal. (ii) Acrylic -- Thermoplastic (plastic). (iii) Medium Density Fibreboard (MDF) -- Manufactured/composite wood (timber-based board). (iv) Brass -- Non-ferrous metal (alloy).

(h)(i)

Answer: Two temporary joints: (1) nut and bolt joint, (2) screwed joint (using screws).

(h)(ii)

Answer: Two types of adhesives: (1) PVA (Polyvinyl Acetate) glue, (2) contact adhesive.

Question Section C - Q32. Figure 14 shows the situation of many shoes scattered untidily in the corner of a bedroom. (a)(i) Identify the problem from the given situation. [2] (ii) Come up with a design brief from the problem stated in (a)(i). [3] (iii) From your design brief, write five specifications. [5] (iv) Sketch freehand a pictorial drawing of the possible solution. [12] (b)(i) Suggest two possible materials you would use for your possible solution. [2] (ii) Give two reasons for each of the materials you have chosen. [4] (iii) What safety measures did you consider to make the possible solution in (b)(i) safe for use? [2]

(a)(i)

Answer: The problem: there is no proper storage for shoes, so they are left scattered untidily on the bedroom floor, making the room look messy and increasing the risk of tripping over them.

(a)(ii)

Answer: Design brief: to design and make a shoe rack that will neatly store and organise several pairs of shoes in the bedroom, keeping the floor clear and tidy.

(a)(iii)

Answer: Five specifications: (1) the rack must hold at least 8-10 pairs of shoes; (2) it must be stable and not tip over; (3) it must fit into the corner of the bedroom without taking up too much floor space; (4) it must be made of a durable, easy-to-clean material; (5) it must be light enough

to move/reposition when needed.

(a)(iv)

NOT DRAWABLE IN THIS FORMAT -- this sub-part requires a freehand pictorial sketch. Description of the possible solution: a tiered, open-shelf shoe rack -- a rectangular wooden frame with 3-4 slanted or flat shelves stacked one above another, each shelf sized to hold a row of shoe pairs, with a solid, wide base for stability.

(b)(i)

Answer: Two possible materials: (1) softwood (e.g. pine board), (2) MDF (Medium Density Fibreboard).

(b)(ii)

Answer: Reasons for softwood: (1) it is strong enough to support the weight of shoes, (2) it is readily available and easy to work with using hand tools. Reasons for MDF: (1) it has a smooth, even surface that is easy to finish/paint, (2) it is cheaper than solid wood while still being sufficiently rigid for shelving.

(b)(iii)

Answer: Safety measures: all edges and corners of the rack were rounded/sanded smooth to avoid cuts or bruises, and the rack was designed with a wide, stable base so that it cannot easily topple over.

Question Section C - Q33 (a). EITHER (Tea tray): (i) Complete the cutting list that your teacher has started for you (Part: Side rails, ?, Base; Qty, L, W, T; Material: Pine). [14] (ii) Explain what is involved in the following stages of material preparation and the tools used: 1 Measuring 2 Marking out. [6] (iii) Sketch a freehand pictorial drawing of the tea tray, of good proportion, neat, and including rendering. [6] (iv) Name a finish that could be applied on the tray and give the reasons for choosing that type. [4]

(i)

Answer: Completed cutting list (typical tea-tray dimensions): Side rails -- Qty 2, Length 400mm, Width 60mm, Thickness 12mm, Material Pine. Base -- Qty 1, Length 380mm, Width 280mm, Thickness 6mm, Material Pine (plywood).

(ii)-1

Answer: Measuring: this involves using a steel rule or tape measure to determine and check the required lengths, widths, and thicknesses of the timber pieces before cutting, ensuring accuracy against the cutting list.

(ii)-2

Answer: Marking out: this involves transferring the measured dimensions onto the timber using a pencil, marking gauge, and try square, drawing clear lines to guide accurate cutting and joint-making.

(iii)

NOT DRAWABLE IN THIS FORMAT -- this sub-part requires a freehand rendered sketch. Description: a shallow rectangular tray with raised side rails around a flat base, drawn in pictorial (isometric-style) view with wood-grain rendering lines along the rails to show the timber texture.

(iv)

Answer: A suitable finish is varnish (or polyurethane lacquer). **Reasons:** it protects the wood from moisture/spills and stains, it is food-safe once cured, and it gives the tray an attractive glossy appearance while highlighting the wood grain.

Question Section C - Q33 (b). OR (Garden tap): The drawing in Figure 15 shows a garden tap. (i) 1 Name a suitable material that can be used to make a garden tap. [1] 2 Give two properties of the material you have mentioned in (i). [2] 3 Mention one type of bond in bricklaying.

1

Answer: A suitable material for making a garden tap is brass.

2

Answer: Two properties of brass: (1) it is corrosion-resistant (does not rust when exposed to water), (2) it is a good conductor and easily cast/machined into the tap's shape while remaining strong and durable.

3

Answer: One type of bond in bricklaying: stretcher bond (other acceptable answers include English bond or Flemish bond).

Question Section C - Q34. EITHER (a) Design a symbol/logo for a Grade 9 school-leavers' moulding company using at least two plane figures, name the company, render the drawing, and show the surface development of a rack. [Total: 35] **OR (b)** Design graphic safety signs for a new school swimming pool conveying: (i) Do not push others in the pool (ii) Keep food away from the pool (iii) Do not smoke. [Total: 35]

NOT ANSWERABLE IN THIS FORMAT -- Section C Part III (Q34, either alternative) is a pure Graphic Communication task: it requires actually designing, drawing, rendering, and developing graphic symbols/signs by hand. There is no factual or explanatory content to answer in text for this question -- it is 100% original freehand design and drawing work, which this text-based solution format cannot produce. This mirrors the Grade 9 Art & Design precedent, where purely practical/drawing-based papers/sections were excluded from this project's scope.

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