BEST BRAIN EXAMINATIONS KONSORTIUM
SPECIAL PRIVATE MOCK EXAMS FOR BECE CANDIDATES **– JUNE 2024**
MARKING SCHEME **– CAREER TECHNOLOGY**

PAPER 2

SECTION A- (15 marks)- COMPULSORY

QUESTION 1

(a) DESCRIBING HOW TO GRILL FISH

- Marinate the fish for at least an hour (in a mixture of blended spices, vinegar or lime juice and pepper)
- Prepare the grill. Brush grill bars clean and preheat. If you are using a charcoal fire, the coals should be hot but not flaming.
- Put marinated fish on the grill.
- Use tongs to turn it.
- Baste regularly to prevent it from becoming dry.
- Depending on the thickness of the fish, grill it for 3 to 6 minutes on each side.

[4 marks]

(b) COPYING AND COMPLETING THE PASSAGE FROM THE LIST OF WORDS

In food preparation, it is important not to **overcook** food and destroy the nutrients and **texture** of food. For example, the best way to prepare palaver sauce is to add the **agushie** before the spinach, so that the spinach does not overcook. Add the raw **shredded** spinach when the **stew** is almost ready to be served so that it does not cook for long after you add the spinach. Adding **vegetables** in this way will help reduce cost, provide nutritious food and save energy.

[3 marks @ ½ mark each]

(c) DESCRIBING HOW TO USE THE TRACING WHEEL

Use the tracing wheel in conjunction with carbon paper and a pattern. Place your fabric on the table wrong-side up and put the carbon between the fabric and the paper pattern. Use the tracing wheel to draw over the lines you need to transfer. This will result in a line made up of fine dots where the spokes of the wheel have pressed against the carbon. The carbon will be smaller than the pattern, so shift it along as you trace.

[4 marks]

(d) DESCRIBING HOW TO MAKE A GATHERING STITCH

By Hand

- Thread two needles. Use a double thread in each needle and secure the threads with a knot. Your thread needs to be a little longer than the final length you want your fabric to be when gathered.
- On the right side of the article, hand stitch two rows of running stitches, one 6 mm from the edge of the fabric and the second one 6 mm from the first row. Also keep 6 mm space between the stitches. After each line of stitches, stretch the fabric when you reach the end.
- Pull the threads gently being careful not to break the thread.
- When you have pulled up the gathers and are happy with the effect, gently stroke the tucks to suit your needs and end off with a double back stitch to secure the gathers.

Using the Sewing Machine

- Thread the machine in the usual way.
- Adjust the stitch length to the maximum.

- Work two rows of straight machine stitches on the right side of the piece of fabric, 6 mm apart with the first row 6 mm from the edge. Do not backstitch to lock stitches when you start and stop sewing.
- Start on one end, holding both bobbin thread tails and slide the fabric towards the centre. Repeat for the other side until the fabric is gathered to match the length of the joining fabric.

[4 marks]

SECTION B
[15 marks]

QUESTION 2

(a) (i) **EXPLAINING WHY SMART MATERIALS ARE MODERN BUT ALL MODERN MATERIALS ARE NOT SMART**

While smart materials are modern materials, all modern materials are not necessarily smart because, smart materials are modern materials with one or more properties that change in response to stimuli, such as light, temperature or moisture.

[1 mark]

(ii) GIVING EXAMPLES OF SMART AND MODERN MATERIALS

Modern Materials

- Nomex
- Kevlar
- Reflective materials
- OLED technology
- Gore-Tex and Dri-FIT fabrics
- Nano-silver antibacterial textiles
- Graphene
- Carbon fibre

Smart Materials

- Heat sensitive spoons
- Luminous watches
- Glow-in-the-dark signs
- Self-healing concrete and paint
- Nitinol wire
- Colour-changing diapers, eyeglasses, mugs and windows

[2 marks @ ½ mark each]

b) (i) DEFINING CLEAN ENERGY

Clean energy is referred to as energy produced through means that do not pollute the atmosphere.

[2 marks]

(ii) **GIVING THE ADVANTAGES OF USING IMPROVED STOVES AT HOME**

- It is energy efficient; less energy is required to perform a task such as cooking: The energy is not wasted during the cooking process.
- Improved cooking stoves such as gas stoves and 'Agyapa' emit less carbon into the atmosphere as compared to the use of traditional cooking stoves, hence protects the user against respiratory illnesses.
- Improved cooking stoves are more eco-friendly than traditional cooking stoves because they emit less or no carbon.
- Improved cooking stoves use less fuel and also cook food faster than traditional cooking stoves, hence save time and money.

[2 marks @ 1 mark each]

(c) (i) IDENTIFYING THE WAYS TO BECOME A BUSINESS OWNER

- By owning a business idea.
- By copying an existing business.
- By buying an existing business.
- By modifying an existing business.

[2 marks @ ½ marks each]

(ii) **STATING THE CHARACTERISTICS OF A SUCCESSFUL ENTREPRENEUR**

- Self- motivated.
- He/she knows that sometimes it is important to take risks.
- Successful entrepreneurs are passionate.
- He/ She believes he/she can achieve his/ her goals
- He/ She has vision
- An entrepreneur must be hardworking to be able to become successful
- He/ She is goal – oriented

[2 marks @ ½ mark each]

(d) (i) **WRITING A DESIGHN BRIEF FOR THE SITUATION**

Design and make a unit for John to use for trapping birds.

[1 mark]

(ii) LISTING THE FACTORS TO BE CONSIDERED WHEN MAKING ANALYSIS

- Function
- Material
- Cost
- Aesthetics
- Ergonomics
- Safety **[2 marks @ ½ mark each]**

(iii) WRITING THE SPECIFICATIONS ON ERGONOMICS

- The unit should durable enough to withstand being placed in the garden.
- The unit should be able to contain the trapped bird.
- The unit should be portable.
- The unit should have a good trap mechanism.
- The unit should be safe and easy to use.

[1 mark @ ½ mark each]

QUESTION 3

(a) (i) PURPOSE FOR ARRANGING FULLNESS IN GARMENT CONSTRUCTION

To make the garments more attractive while also providing shape and comfort

[1 mark]

(ii) WAYS OF ARRANGING FULLNESS IN GARMENT CONSTRUCTION

Darts: A dart is a pleated portion of fabric that adds shape to the garment. Darts are typically used in the bust area, waistline, and back of dresses, tops, and skirts to shape them around the natural curves of the body.

Pleats: They are used to create shape and volume in garments and sewn home artefacts. A pleat is a fold of fabric that is held in place by stitching either at the top, bottom, or both. The lines of pleats are more or less straight. They are commonly used at the bottom of garments and artefacts.

Gathering: It is an effective and decorative way of distributing fullness over a given area. It involves drawing a given amount of fabric into a smaller area, using stitches. Ruffling, ruching, shirring, and smocking are examples of specific gathering techniques.

[1 mark @ ½ mark each]

(b) (i) **NAMING THE MATERIALS NEEDED FOR MAKING ITEMS THROUGH CROCHETING**

- Crochet hook
- Wool
- Cotton
- Twine
- Nylon
- Rope

[2 marks @ ½ mark each]

(ii) LISTING THE ITEMS THAT CAN BE MADE THROUGH CROCHETING

- Baby clothes
- Bags
- Bed spread
- Bootees
- Table runners
- Shawls
- Mufflers
- Chair backs

[3 marks @ ½ marks each]

(iii) GIVING THE BASIC STITCHES USED IN CROCHETING

- Chain stitch
- Slip stitch
- Double crochet
- Treble crochet

[2 marks @ 1 mark each]

(c) (i) **ADVANTAGES OF USING LABOUR-SAVING KITCHEN EQUIPMENT**

- Reduces the amount of time spent in the kitchen.
- Catering or restaurants can serve customers faster and more efficiently.
- Higher productivity resulting in higher income.
- Cuts expenses by reducing workload.
- Makes food preparation easier, enjoyable and more comfortable.
- It improves the quality of work in the food laboratory.
- Helps improve sanitation in the kitchen.

[1½ marks @ ½ mark each]

(ii) DISADVANTAGES OF USING LABOUR-SAVING KITCHEN EQUIPMENT

- They can be expensive.
- They mostly rely on electricity.
- They need to be used with skill and care.
- Faulty equipment can cause accidents.
- Doing some work by hand teaches valuable skills and endurance.

[1½ marks @ ½ mark each]

(d) (i) **PRINCIPLES TO FOLLOW IN USING THE BAKING METHOD OF COOKING**

- Baking usually occurs at temperatures between 150 and 190 °C.
- All ingredients need to be measured carefully to achieve good results.
- Preheat the oven to ensure that food is evenly cooked.
- Banging gas oven doors can cause the flame to die.
- Pans, moulds and baking sheets can be greased with oil and butter to avoid food from sticking in the pan. **[2 marks]**

(ii) **THINGS TO LOOK OUT FOR WHEN BUYING WHOLE FISH.**

- Fish should have firm and shiny skin with tightly clinging scales.
- The fins should be clearly defined and not broken.
- Fresh fish should smell like the sea.
- The eyes should be bright and clear, not cloudy or sunken.
- The gills should be red.
- The tail should be firm.
- The flesh should be firm.

[1 mark @ ½ mark each]

SECTION C
TEST OF PRCTICAL [15 marks]

QUESTION 4

(a) **COPYING AND COMPLETING THE TABLE TO REARRANGE THE STAGES IN SEQUENTIAL ORDER AND STATING THE TOOLS OR MATERIALS REQUIRED AT EACH STAGE**

STAGE	OPERATION	TOOLS/ MATERIALS
I	Measure, mark, cut and plane all members to required size	Cross – cut saw, tenon saw, tape measure, try – square, pencil
II	Mark and indicate areas where joint would be cut	Tape measure, pencil, try – square, mortice gauge
III	Cut all joints in various positions	Mortice chisel, firmer chisel, tenon saw, mallet
IV	Dry assemble all members	Various members, mallet
V	Apply glue to all joints	Brush, glue
VI	Assemble the members	G – clamp, screw driver, hammer, nails
VII	Apply finishes	Brush, paint, polish

[3 marks]

(b) (i) **REARRANGING THE STEPS IN CORRECT ORDER OF MAKING A COAL- POT**

- Measure the metal pieces to the required dimensions
- Mark – out the parts of the coal – pot
- Cut – out pieces
- File pieces to the required size
- Assemble the parts
- Clean the coal – pot

[3 marks]

(ii) **LISTING THE TOOLS FOR MARKING – OUT THE PARTS OF THE COAL- POT**

- Scriber
- Try – square
- Sliding bevel
- Dot punch
- Centre punch
- Add – leg calipers
- Divide

[1 mark @ ½ mark each]

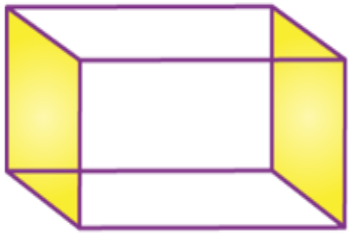
(iii) **CUTTING TOOLS FOR CUTTING THE PARTS OF THE COAL-POT**

- Flat chisel
- Hack saw
- Flat file
- Hand file
- Snip **[1 mark @ ½ mark each]**

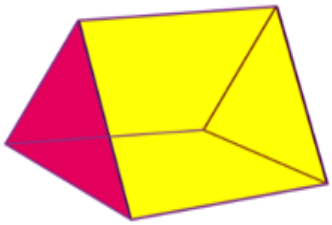
(iv) **LISTING THE MATERIALS FOR MAKING THE COAL-POT**

- Medium carbon steel
- Mild steel
- Aluminium
- Cast iron **[1 mark @ ½ mark each]**

(c) **DRAWING SOME TYPES OF PRISMS**



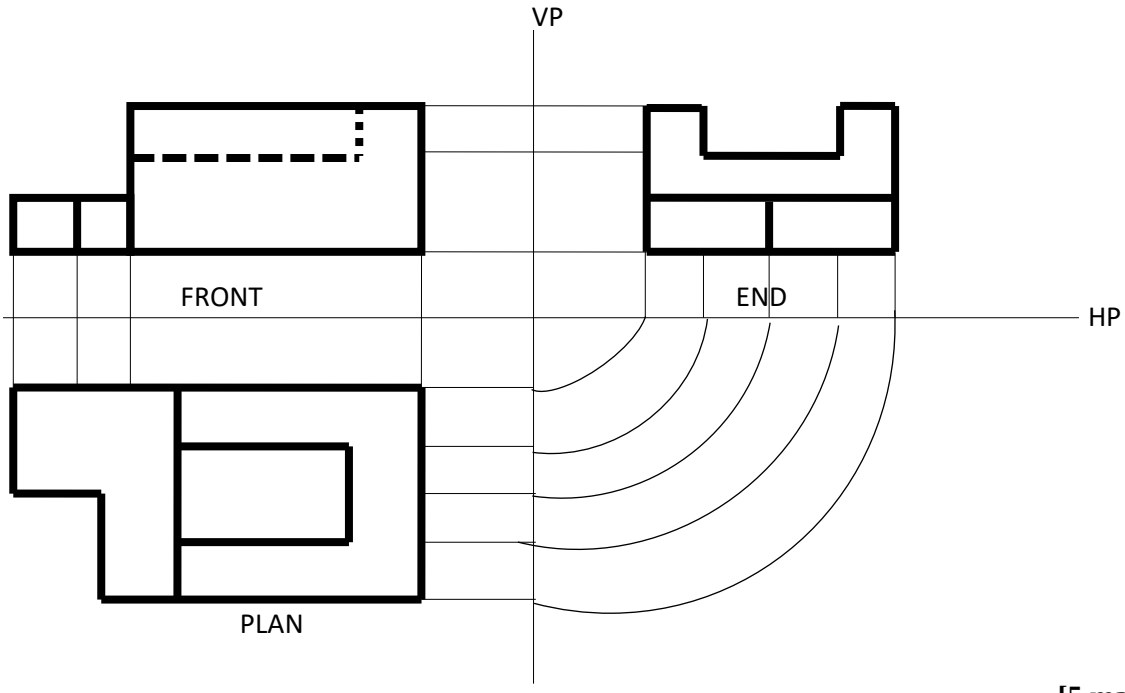
SQUARE PRISM



TRIANGULAR PRISM

[1mark ½ mark each]

(d) (i) DRAWING THE WOODEN WORKPIECE FROM ARROW A, THE PLAN AND THE LEFT AND END ELEVATION IN FIRST ANGLE PROJECTION



[5 marks]

SECTION D
[15 marks]

QUESTION 5

(a) **EXPLAINING WHAT A PYRAMID IS**

A pyramid is a structure whose sides are always triangular and extends to meet at a common point directly above the centre of the base called the apex. A pyramid only has one base which can be any polygon shape, such as square, triangle or pentagon.

(i) **Square pyramid:** The surface of a square pyramid is formed from four triangles that slant upwards from a square base.

(ii) **Triangular pyramid:** The surface of a triangular pyramid is formed from four triangles. Three triangular sides slant upwards from a triangular base.

(iii) **Hexagonal pyramid:** The surface of a hexagonal pyramid is formed from six triangles slanting upwards from a hexagonal base.

[4 marks @ 1 mark each]

(b) **DESCRIBING THE USE OF THE TOOLS**

(i) **Inside calipers**: The legs are placed inside the material or object to be measured and then extended until the feet make contact with the material. The span of the legs is then measured against a steel ruler to give an accurate reading.

(ii) **Spring divider:** One of the legs is firmly placed on the material while the other leg is rotated, scribing a circle or arc onto the workpiece.

[4 marks @ 2 marks each]

(c) **STATING THE USE OF THE TOOLS**

(i) **Brace and bit**: It is used for boring holes in wood.

(ii) **Mortise gauge:** It is used to transfer measurements onto wood for marking out joints and indicating where to make a cut.

[4 marks @ 2 marks each]

(d) **EXPLAINING THE PROPERTIES OF MATERIALS**

(i) **Fusibility:** It refers to how easily a material will melt and fuse with another.

(ii) **Density**: It refers to how solid a material is.

(iii) **Elasticity**: It refers to whether a material can be stretched and then returned to its original shape.

[3 marks @ 1 mark each]

QUESTION 6

(a) THE MECHANISMS AND GIVING TWO APPLICATIONS OF EACH

(i) Levers: A lever is a rigid bar or rod that helps to move something up or down. The long handles of wheelbarrows form a lever mechanism, making it easier to move heavy loads. Other examples of levers are claw hammers, pliers and bottle openers.

(ii) Linkages: A linkage is a system of linked levers, connected by pivots. The connected levers work together to change movement. For example, in n excavator, the linkage system controls the movement of the bucket. In a scissor lift, the system that moves the load upwards is a linkage system**.**

(iii) Crank mechanism: A crank mechanism is a handle or arm that is attached to a rotating shaft. Cranks are part of everyday machines such as hand-drawn water wells and hand drills. Cranks are also used in winches on boats.

[6 marks @ 2 marks each]

(b) EXPLAINING THE FORCES THAT ACT ON STRUCTURES

(i) Tension: This is a force that can stretch a material or pull it apart.

(ii) **Torsion:** It is a force that twists the ends of materials in opposite directions.

(iii) Compression: It is a force that shortens or compacts material.

(iv) **Bending:** It is a force that curves materials by stretching and squashing at the same time.

[4 marks @ 1 mark each]

(c) (i) GIVING THE PROPERTIES OF ALUMINIUM

- It is light in weight.
- It is bluish-white in colour.
- It is malleable.
- It is non-magnetic.
- It is malleable.
- It is ductile.

[1 mark @ ½ mark each]

(ii) **STATING THE USES OF TIN**

- It is used for coating sheet steel.
- It is used for making cans.
- Tin is used to make food containers.
- It is used for solders for connecting pipes.

[1 mark @ ½ mark each]

(d) (i) **EXPLAINING THE TERM BONDING**

It refers to the systematic arrangement of units (brick, blocks or stones) in a set order to avoid vertical continuous joints.

[1 mark]

(ii) **STATING THE PURPOSES OF BONDING**

- To avoid having continuous joints.
- To produce a strong wall.
- To produce an accurate work.

[2 marks @ 1 mark each]

PAPER 1

1. C	**11. A**	**21. B**	**31. C**
2. B	**12. D**	**22. D**	**32. B**
3. B	**13. A**	**23. C**	**33. B**
4. A	**14. C**	**24. B**	**34. C**
5. B	**15. A**	**25. C**	**35. B**
6. D	**16. B**	**26. B**	**36. B**
7. B	**17. C**	**27. C**	**37. C**
8. A	**18. A**	**28. D**	**38. D**
9. A	**19. C**	**29. B**	**39. B**
10. C	**20. C**	**30. C**	**~~40~~.D**

[40 marks @ 1 mark each]