P033/1 BECE
February 2021
INTEGRATED SCIENCE 1
Objective
45 minutes

1

Name.....

Index Number.....

THE WEST AFRICAN EXAMINATIONS COUNCIL

GHANA

Basic Education Certificate Examination

February 2021 | INTEGRATED SCIENCE 1 | 45 minutes

OBJECTIVE TEST

Do **not** *open this booklet until you are told to do so. While you are waiting, read and observe the following instructions carefully. Write your* **name** *and* **index number** *in* **ink** *in the spaces provided above.*
The paper will last **45** minutes.

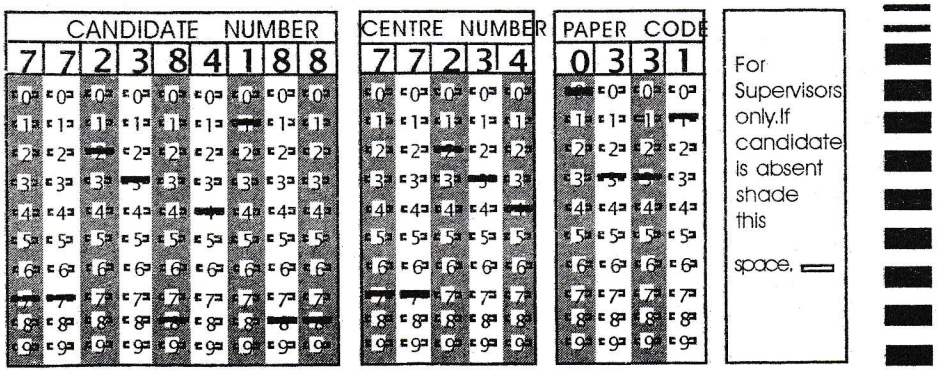
Answer **all** *the questions on your Objective Test answer sheet.*

1. Use **2B** pencil throughout.
2. On the pre-printed answer sheet, check that the following details are **correctly** printed: Your **surname** followed by your **other names**, the *Subject Name*, your *Index Number*, *Centre Number* and the *Paper Code*.
3. In the boxes marked *Candidate Number, Centre Number* and *Paper Code*, **reshade** each of the shaded spaces.
4. An example is given below. This is for a candidate whose name is Ellen Akua GARIBA. Her *index number* is 772384188 and she is writing the examination at *Centre Number* 77234. She is offering *Integrated Science* 1 and the *Paper Code is* 0331.

THE WEST AFRICAN EXAMINATIONS COUNCIL
GHANA
BASIC EDUCATION CERTIFICATE EXAMINATION
OBJECTIVE ANSWER SHEET

CANDIDATE NAME:	SUBJECT:
GARIBA ELLEN AKUA	INTEGRATED SCIENCE 1

1. Use 2B pencil, Press firmly. your first mark completely.
2. Answer each question by choosing one letter and then, shade through the letter chosen like this. A B C D E
3. If you want to change an answer, erase
4. If only four alternative answers are given for each question, ignore the letter E.
5. Your question paper may have fewer than 60 questions.



Answer **all** *the questions.*

Each question is followed by four options lettered **A** *to* **D**. *Find the* **correct** *option for* **each** *question and shade in* **pencil** *on your answer sheet the space which bears the same letter as the option you have chosen. Give only* **one** *answer to* **each** *question. An example is given below.*

Which of the following substances is **not** an element?

A. Aluminium
B. Ammonia
C. Oxygen
D. Sodium

The correct answer is Ammonia, *which is lettered* **B** *and therefore answer space* **B** *would be shaded.* ⊏A⊐ ■B■ ⊏C⊐ ⊏D⊐ ⊏E⊐

Think carefully before you shade the answer spaces. Erase completely any answer you wish to change.

Do all rough work on this question paper.

Now answer the following questions.

1. The egg from the ovary is released into the fallopian tube during
   A. ovulation.
   B. sperm production.
   C. fertilization.
   D. menstruation.

2. When Benedict's solution is used to test for sugar, the colour changes to
   A. red.
   B. violet.
   C. brick-red.
   D. blue-black.

3. Oxygen gas is represented by the chemical symbol O_2. This symbol represents two
   A. ions of oxygen.
   B. atoms of oxygen.
   C. elements of oxygen.
   D. molecules of oxygen.

4. Farmers prefer organic fertilizers to inorganic fertilizers because organic fertilizers
   A. are environmentally friendly.
   B. produce crops with excellent flavour.
   C. have low drainage ability.
   D. have high rate of erosion.

5. Endoparasites of farm animals can be controlled by
   A. drenching.
   B. dusting.
   C. spraying.
   D. hand-picking.

6. Two atoms of the same element with symbol $^{12}_{6}X$ and $^{14}_{6}X$ are different in their
   A. electron numbers.
   B. proton numbers.
   C. neutron numbers.
   D. atomic numbers.

7. Nitrogen deficiency in the soil causes
   A. fruit drop.
   B. yellowing of leaves.
   C. poor seed formation.
   D. purple colouration of leaves.

8. Which of the following statements describes a second class lever? The
   A. pivot is between load and effort.
   B. effort is between load and pivot.
   C. load is between pivot and effort.
   D. effort and load are always equal.

9. The **hardest** part of the human tooth is the
   A. enamel.
   B. dentine.
   C. cement.
   D. pulp.

10. A girl who was accidentally trapped in a cupboard died because
   A. only nitrogen was left in the cupboard.
   B. greater part of the oxygen in the cupboard was used up.
   C. carbon dioxide run short in the cupboard.
   D. all the air in the cupboard was used up.

11. The **simplest** unit of protein is
   A. vitamins.
   B. glucose.
   C. fatty acid.
   D. amino acid.

12. The **main** reason for stirring soil surfaces of garden beds is to
   A. ensure penetration of air.
   B. promote growth of seedlings.
   C. promote soil compaction.
   D. limit activity of micro-organisms.

13. Which of the following diseases affects **both** cattle and humans?
   A. Typhoid
   B. Buruli ulcer
   C. Tuberculosis
   D. African swine fever

14. The combining powers of sodium and oxygen atoms are 1 and 2 respectively. The chemical formula of a stable compound formed between sodium and oxygen is
    A. NaO.
    B. Na_2O.
    C. Na_2O_2.
    D. NaO_2.

15. Which of the following devices is a simple machine?
    A. Tractor
    B. Motor cycle
    C. Sewing machine
    D. Wheel and axle

16. Which of the following statements is **correct** about anions? They contain
    A. less protons than electrons.
    B. more protons than electrons.
    C. the same number of protons and electrons.
    D. the same number of protons and neutrons.

17. A ball of mass 2.0 kg rolls with a velocity of 10 m/s. What is its kinetic energy?
    A. 5 J
    B. 10 J
    C. 20 J
    D. 100 J

18. Hand trowel is used in farming to
    A. remove weeds.
    B. level soil surface.
    C. transplant seedlings.
    D. turn manure during compost-making.

19. Which of the following substances contains natural acid?
    A. Vinegar
    B. Wood ash
    C. Saliva
    D. Bile

20. Absorption of the end-product of digestion in the ileum is aided by the presence of the
    A. bile.
    B. villi.
    C. enzymes.
    D. peristalsis.

21. An example of a fruit vegetable is
    A. cabbage.
    B. carrot.
    C. onion.
    D. tomato.

22. A **common** method of sowing seeds on a nursery is by
A. broadcasting.
B. transplanting.
C. pricking out.
D. ridging.

23. The standard unit of length is the
A. centimetre.
B. decimetre.
C. metre.
D. millimetre.

24. Which of the following heavenly bodies is a source of heat and light?
A. Mars
B. Sun
C. Moon
D. Earth

25. The instrument used to measure electric current is
A. ammeter.
B. barometer.
C. voltmeter.
D. thermometer.

26. Why are some seeds nursed before transplanting?
I. For proper care to be given.
II. Some of the seeds are too small.
III. It reduces competition for soil nutrient.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

27. Which of the following types of manure is from an organic source?
A. Compost
B. N. P. K
C. Urea
D. Muriate of potash

28. Which of the following substances is a mixture?
A. Silver
B. Gold
C. Air
D. Hydrogen

29. The method of controlling the population of **both** larvae and pupae of mosquito is
I. environmental.
II. chemical.
III. biological.

A. I and II only
B. II and III only
C. I and III only
D. I, II and III

30. Determine the mass of a substance if its volume is 5.0 cm^3 and it has a density of 5.0 g cm^{-3}.
A. 1.0 g
B. 5.0 g
C. 10.0 g
D. 25.0 g

31. Water that **does not** lather readily with soap may contain
A. Ca^{2+}.
B. H^+.
C. OH^-.
D. SO_4^{2-}.

32. The bottom of a pool of water appears closer to the surface than it is. Which of the following properties account for this observation?
A. Rectilinear propagation
B. Transparency of water
C. Refraction
D. Reflection

33. What happens during the eclipse of the moon? The
A. moon comes between the earth and the sun.
B. earth comes between the moon and the sun.
C. sun comes between the moon and the earth.
D. sun moves round the earth.

34. The appropriate apparatus for the separation of a mixture of water and kerosene is
A. separating funnel.
B. evaporating dish.
C. filter funnel.
D. condenser.

35. The movement of dissolved plant nutrients from the upper layer to deeper layers of the soil is termed
A. aeration.
B. capillarity.
C. erosion.
D. leaching.

36. When three resistors of different resistances are arranged in parallel, which of the following statements is/are **correct**?

I. The same current flows through all of them.
II. Their effective resistance is greater than any one of them.
III. The current through them is not the same.

A. I only
B. I and II only
C. II only
D. III only

37. Which of the following substances are **not** raw materials for photosynthesis?

I. Chlorophyll
II. Carbon (IV) oxide
III. Water
IV. Oxygen

A. I and IV only
B. I and III only
C. II and IV only
D. I, II and IV only

38. The component of air that supports burning is

A. oxygen.
B. nitrogen.
C. hydrogen.
D. carbon dioxide.

39. Which of the following farming systems can lead to total crop failure?

A. Crop rotation.
B. Mixed farming
C. Mixed cropping
D. Mono cropping

40. Balance the following chemical equation.

$SO_2 + O_2 \rightleftharpoons 2\ SO_3$

A. 2
B. 1
C. ½
D. 3

END OF PAPER

P033/2 BECE February 2021 INTEGRATED SCIENCE 2 Essay 1 hour 15 minutes	2

CANDIDATE'S NAME	

INDEX NUMBER	SIGNATURE

DATE:

THE WEST AFRICAN EXAMINATIONS COUNCIL

GHANA

Basic Education Certificate Examination

February 2021 | INTEGRATED SCIENCE 2 [100 marks] | 1 hour 15 minutes

DIRECTIONS TO CANDIDATES

1. In the spaces provided above, insert your Name, Full Index Number, normal Signature and the Date of Examination.
2. Write on **both** sides of the paper unless otherwise instructed on the question paper.
3. The questions are in **two** sections; **A** and **B**. Answer **five** questions in **all**, question **1** in section **A** and any other **four** questions from section **B**.
4. **Under no circumstance should you work on any other paper** or **tear any part of the question paper**. The question paper will be collected at the end of the test.
5. Write in the space provided below, the **NUMBERS OF THE QUESTIONS YOU HAVE ANSWERED** in the order in which you answered them.

For Examiner's Use Only	
Question Number	**Mark**
TOTAL	

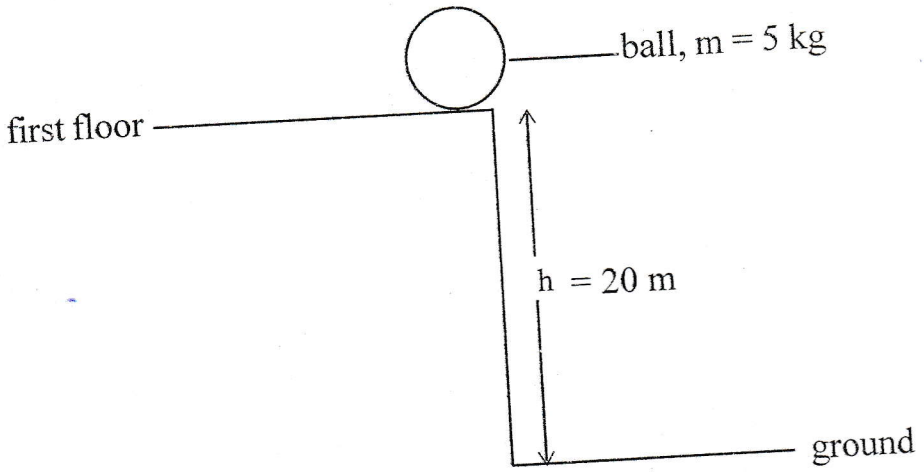
PAPER 2 1¼ hours
ESSAY
[100 marks]

This paper is in **two** *sections*: **A** *and* **B**. *Answer* Question **1** *in section* **A** *and any other* **four** *questions in section* **B**. *Answer* **all** *the questions in your question paper.*
Credit will be given for clarity of expression and orderly presentation of material.

SECTION A
[40 marks]

Answer **all** *of* Question **1**.

1. (*a*) The diagram below is an illustration of a ball of mass $m = 5$ kg placed on the first floor of a storey building of height $h = 20$ m above the ground. The ball was pushed and it fell to the ground.
Study the diagram carefully and answer the questions that follow.



(i) Name the energy possessed by the ball on the first floor.

.....
[1 mark]

(ii) State the type of force that acts on the ball as it falls to the ground.

.....
[1 mark]

(iii) Calculate the energy possessed by the ball on the first floor.

.....

.....

.....

.....

.....

.....

[3 marks]

(iv) State the energy conversion as the ball falls.

.....

[1 mark]

(v) Calculate the value of the velocity just before the ball touches the ground.

.....

.....

.....

.....

.....

.....

[3 marks]

(vi) Name **two** types of force apart from the one stated in (ii).

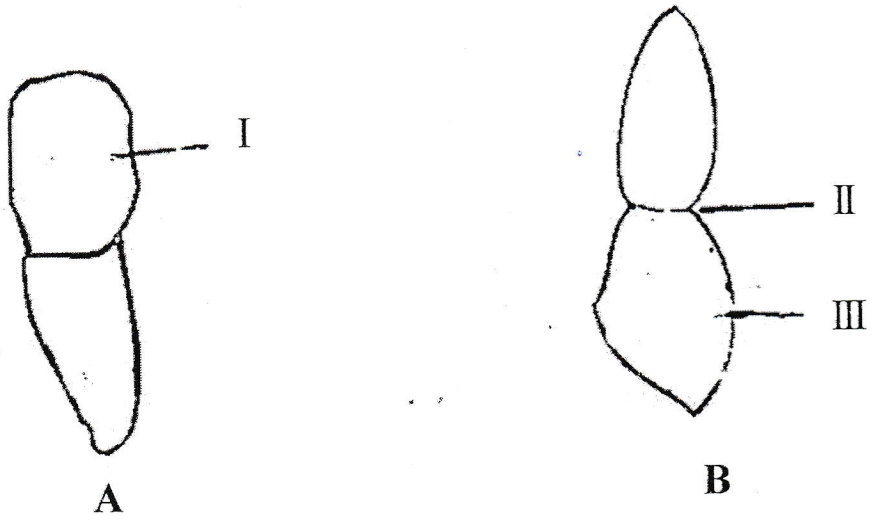
.....

.....

[2 marks]

[Take g = 10 m s^{-2}]

(*b*) The diagrams below are illustrations of two different types of tooth in humans. *Study the diagrams carefully and answer the questions that follow.*



A **B**

(i) Name **each** of the teeth labelled **A** and **B**.

A.....

B.....

[2 marks]

(ii) Name **each** of the parts labelled I, II and III.

I.....

II.....

III.....

[3 marks]

(iii) State **two** structural differences between teeth **A** and **B**.

.....

.....

.....

[2 marks]

(iv) State **one** function of **each** of the teeth labelled **A** and **B**.

A .....

B.....

.....

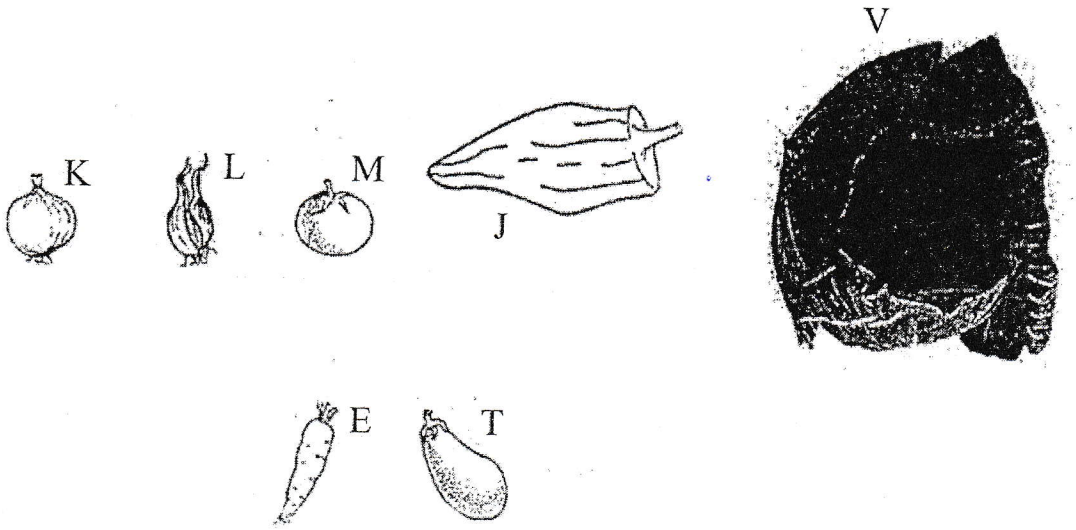
[2 marks]

(v) State **two** ways of caring for the teeth.

.....

.....

(*c*) The diagrams below are illustrations of various vegetable crops.
Study the diagrams carefully and answer the questions that follow.



(i) Identify **each** of the vegetables labelled M, J, T, and V.

M:.....

J:.....

T:.....

V:.....

[4 marks]

(ii) Name the planting material used for propagating **each** of the vegetables labelled K and E.

K.....

E.....

[2 marks]

(iii) Name the edible portion of the vegetable labelled V.

.....

[1 mark]

(iv) State the cultural practice that is carried out on the vegetable labelled M:
(α) to increase the size of the fruit;

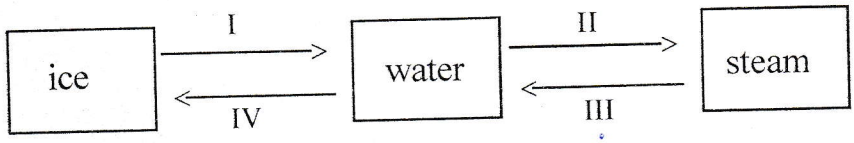
.....

(β) for a clean fruit to be harvested.

.....

[2 marks]

(*d*) The diagram below is an illustration to demonstrate how matter changes from one state to another.
Study the diagram and answer the questions that follow.



(i) State what takes place in **each** of the stages labelled I, II, III, and IV.

I .....

II .....

III .....

IV .....
[4 marks]

(ii) In which of the labelled stages is heat added?

.....
[1 mark]

(iii) In which of the labelled stages is heat removed?

.....
[1 mark]

(iv) What happens to the temperature in:
(α) Stage I?

.....

.....
(β) Stage IV?

.....

.....
[2 marks]

(v) State how the particles in ice are arranged.

.....

.....
[1 mark]

SECTION B
[60 marks]

Answer **four** *questions* **only** *from this section.*

2. (*a*) List **four** elements of climate.

.....

.....

.....

.....

.....

[4 marks]

(*b*) (i) Name **four main** parts of a complete flower.

.....

.....

.....

.....

(ii) State the function of **one** of the parts named in (i).

.....

[5 marks]

(*c*) (i) Explain **briefly** the term *thinning out*.

.....

.....

.....

(ii) State **one** way in which pruning is important.

.....

.....

[3 marks]

(*d*) (i) What is a *chemical change*?

.....

.....

(ii) Name **one** solvent for sugar.

.....

[3 marks]

3. (*a*) (i) State **two** of the farming systems.

.....

.....

.....

(ii) State **three** factors that bring about the difference in the farming systems in crop production.

.....

.....

.....

.....

[5 marks]

(*b*) Explain **briefly** why worn-out vehicle tyres should not be used on the vehicles.

.....

.....

.....

[3 marks]

(*c*) (i) What is *vegetative propagation*?

.....

.....

(ii) Name the organ used to propagate **each** of the following plants vegetatively:

(α) Onions;

.....

(β) Cocoyam.

.....

[4 marks]

(*d*) Draw the electron configuration for calcium atom showing the distribution of the electrons in its shell.
[Ca = 20]

.....

.....

.....

.....

.....

.....

[3 marks]

4. (*a*) In an experiment to investigate the conditions necessary for rusting, one of the set-ups contained anhydrous calcium chloride:

(i) State the role of the anhydrous calcium chloride;

.....

.....

(ii) State **one** condition necessary for rusting.

.....

[2 marks]

(*b*) (i) What are *vitamins*?

.....

.....

(ii) Name the deficiency disease of **each** of the following vitamins:

(α) A

.....

(β) E

.....

[4 marks]

(*c*) With the aid of a circuit diagram, explain **briefly** forward bias.

.....

.....

.....

.....

.....

[5 marks]

(*d*) Give **two** examples **each** of:

(i) compound machines;

.....

.....

(ii) simple machines.

.....

.....

[4 marks]

5. (*a*) Give the conditions necessary for seed germination.

.....

.....

.....

.....

[4 marks]

(*b*) State **three** ways in which weeding is important in vegetable crop production.

.....

.....

.....

.....

[3 marks]

(*c*) Describe **briefly** how ions are formed.

.....

.....

.....

.....

[3 marks]

(*d*) The following instruments are used in the laboratory and in the home.
Use them to answer the questions that follow.

A. knife
B. nut cracker
C. broom
D. pair of scissors

(i) What is the general name of the instruments?

.....

(ii) State the class of **each** of the instrument listed A, B, C and D.

A.....

B.....

C.....

D.....

[5 marks]

6. (*a*) (i) Explain the term *electric current*.

.....

.....

(ii) Name the instrument used to measure electric current.

.....

.....

(iii) State the S.I. unit of electric current.

.....

.....

[4 marks]

(*b*) (i) State **three** ways in which pruning is important.

.....

.....

.....

.....

(ii) State **one** way in which soil water is important to plants.

.....

.....

[4 marks]

(*c*) List **four** processes that can change matter from one state to another.

.....

.....

.....

.....

.....

[4 marks]

(*d*) Tabulate **three** differences between *photosynthesis* and *respiration*.

[3 marks]