NATIONAL EXAMINATIONS COUNCIL
2023 BASIC EDUCATION CERTIFICATE EXAMINATION

B8301 & B8302
BASIC SCIENCE
AND TECHNOLOGY

2 hours　　　　**I&II**

> Please do not open this question booklet until you are told to do so.
> While waiting, read the following instructions carefully.

There are **two** papers of **sixty (60) multiple-choice** questions each. **Paper I** which is Basic Science and Physical and Health Education will last for **1 hour** after which the OMR Sheet will be collected. **Paper II** which is Basic Technology and Computer Studies will also last for **1 hour.**

PAPER I
BASIC SCIENCE & PHYSICAL AND HEALTH EDUCATION

Time Allowed: 1 hour

INSTRUCTIONS TO CANDIDATES

1. Answer **all** questions,

2. Use **HB pencil** only.

3. Write your **Name** and **School Name** on the answer sheet provided. Also, write and shade appropriately your **Registration Number** in the spaces provided.

4. Answer each question by shading the box that corresponds to the option you have chosen.

5. Do **not** waste time on any question. If you find any difficult, go to the others and finish them before you come back to the difficult one(s).

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Turn Over.

BASIC SCIENCE & PHYSICAL AND HEALTH EDUCATION
Time Allowed: 1 hour

PAPER I
BASIC SCIENCE

1. Human solid and liquid wastes from homes is known as
    A.   effluent.
    B.   garbage.
    C.   refuse.
    D.   sewage.
    E.   sullage.

2. A masked trait is said to be
    A.   allelic.
    B.   dominant.
    C.   genotypic.
    D.   phenotypic.
    E.   recessive.

3. The following are reasons for skill acquisition **except** for
    A.   fun making.
    B.   managing emergencies.
    C.   self employment.
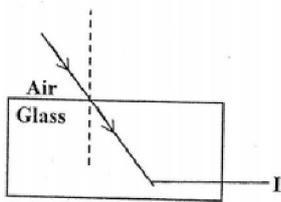   D.   survival strategy.
    E.   taking risks.

4. The incubation period in birds is between
    A.   fertilization and hatching of eggs.
    B.   fertilization and laying of eggs.
    C.   hatching of the first egg and the last egg.
    D.   laying and hatching of eggs.
    E.   laying of the first egg and hatching.

5. Which of the following is an example of waterborne disease?
    A.   Cold
    B.   Measles
    C.   Pneumonia
    D.   Tuberculosis
    E.   Typhoid

6. A product of tobacco is
    A.   cigarette.
    B.   cocaine.
    C.   heroin.
    D.   marijuana.
    E.   morphine.

7. The process by which food substances are broken down into simple and soluble form is called
    A.   defecation.
    B.   digestion.
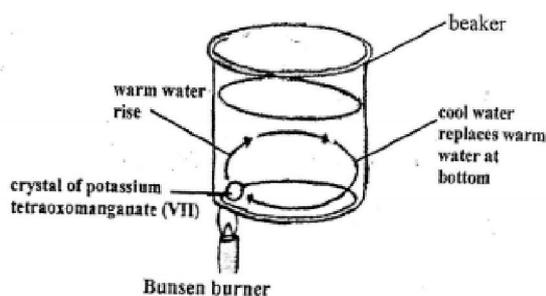   C.   excretion.
    D.   mastication.
    E.   regurgitation.

Study the diagram below and use it to answer questions **8** and **9.**

8. The diagram illustrates
    A.   diffused reflection.
    B.   laws of refraction.
    C.   refraction of light.
    D.   regular reflection.
    E.   scattered reflection.

9. The part labelled **I** is the
    A.   incident ray.
    B.   reflected ray.
    C.   reflecting medium.
    D.   refracted ray.
    E.   refracting medium.

10. The distribution of materials within an organism is known as
    A.   circulation.
    B.   digestion.
    C.   excretion.
    D.   reproduction.
    E.   respiration.

11. Which of the following is a flowering plant?
    A.   Conifer
    B.   Fern
    C.   Ixora
    D.   Liverwort
    E.   Moss

12. The conversion of water vapour to liquid is known as
    A.   condensation.
    B.   deposition.
    C.   evaporation.
    D.   sublimation.
    E.   vaporization.

13. A microphone converts sound energy into ____ energy.
    A.   electrical
    B.   heat
    C.   magnetic
    D.   mechanical
    E.   light

14. Which of the following is the chemical formula of water?
    A. HO
    B. H_2O_2
    C. h_2O
    D. H_3O
    E. H_3O_2

15. Which of the following vitamins is also referred to as the "Sunshine vitamin"?
    A. A
    B. B
    C. D
    D. E
    E. K

16. In the solar system, the fourth planet from the sun is
    A. earth.
    B. mars.
    C. mercury.
    D, neptune.
    E. venus.

17. Which of the following is a renewable source of energy?
    A. Coal
    B. Diesel
    C. Petrol
    D. Gasoline
    E. Wood

18. Metals expand when _____ energy is applied to them.
    A. chemical
    B. heat
    C. kinetic
    D. light
    E. sound

19. Matter are classified into _____ states.
    A. two
    B. three
    C. four
    D. five
    E. six

20. The following are methods of controlling soil erosion except
    A. bush burning.
    B. mulching.
    C. planting of cover crops.
    D. planting of trees.
    E.. terracing.

21. The method of growing food crops and trees on the same piece of land is
    A. afforestation.
    B. agroforestry.
    C. crop rotation.
    D. horticulture.
    E. mixed cropping.

22. When two forces act on a body and it remains at rest, it means the forces acting   on it are
    A. equal and opposite.
    B. inactive.
    C. in constant motion.
    D. unbalanced.
    E. weak and active.

23. The method of heat transfer demonstrated in the diagram below is

    A.   conduction.
    B.   convection.
    C.   evaporation.
    D.   radiation.
    E.   vaporization.

24. An engine pumps water of 50 kg through a vertical height of 4 m in 10s. Calculate the power of the pump in watts, [$g = 10\ ms^{-2}$]
    A.   26
    B.   54
    C.   55
    D.   74
    E.   200

25. The energy possessed by a stationary ball is _____ energy.
    A.   chemical
    B.   electrical
    C.   kinetic
    D.   magnetic
    E.   potential

26. Which of the following is not a radioactive element?
    A.   Magnesium
    B.   Plutonium
    C.   Radium
    D.   Thorium
    E.   Uranium

28. When a bar magnet is suspended freely and it comes to rest, its ends point in the _____ direction.
    A.   East-West
    B.   North-South
    C.   North-West
    D.   South-East
    E.   South-West

PAPER II
BASIC TECHNOLOGY AND COMPUTER STUDIES

Time Allowed: 1 hour

Please do not open this Paper until you are told to do so. While waiting, read the following instructions carefully.

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Turn Over.

PAPER II
BASIC TECHNOLOGY

1.   The road sign below indicates

   A.   animal crossing.
   B.   give way.
   C.   narrow bridge.
   D.   no parking.
   E.   pedestrian crossing.

2.   A component of hydraulic machine that controls the fluid direction, pressure and flow rate is
   A.   actuator.
   B.   pipe.
   C.   pump.
   D.   reservoir.
   E.   valve.

3.   What is the ratio of a driving gear with 20 teeth that is driven by 5 teeth gear?
   A.   1:4
   B.   1:5
   C.   1:10
   D.   4:1
   E.   5:1

4.   Cleaning, inspection, oiling and retightening done within a specific time frame   are all activities of ___ maintenance.
   A.   corrective
   B.   periodic
   C.   predictive
   D.   preventive
   E.   usage-based

5.   The following are types of belt drive **except**
   A.   crossed.
   B.   flat.
   C.   rope.
   D.   sprocket.
   E.   vee.

6.   The appliance represented below is a

   A.   bath.
   B.   bidet
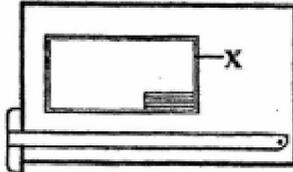   C.   sink.
   D.   wash hand basin.
   E.   water closet

7. Which of the following is **not** a building material?
    A. Anvil
    B. Glass
    C. Gravel
    D. Plastic
    E. Wood

8. Rescue operations on the road are carried out by
    A. Air force officer.
    B. Custom officer.
    C. Fire fighters.
    D. Road safety corps.
    E. Sanitary inspectors.

9. Which of the following is **not** used for rescue operation?
    A. Ambulance
    B. Escalator
    C. Grader
    D. Ladder
    E. Stretcher

10. The Global System for Mobile (GSM) Communication is facilitated by ____ technology.
    A. computer signals
    B. gamma rays
    C. infrared rays
    D. microwaves
    E. radiowaves

11. Disposable hand gloves in first aid box is used to
    A. keep the injured area compressed.
    B. prevent blood circulation.
    C. prevent further injuries.
    D. reduce bleeding.
    E. reduce chance of infection.

12. Tin is generally used for
    A. decorative purposes.
    B. manufacturing aircraft parts.
    C. producing roofing sheets.
    D. producing waterpipes.
    E. protective coating on metals.

13. Solders are alloys of tin and
    A. aluminium.
    B. copper.
    C. lead.
    D. silver.
    E. zinc.

14. The ability of a material to resist breaking is
    A. brittleness.
    B. ductility.
    C. elasticity.
    D. hardness.
    E. toughness.

15. Which of the following tools is used for measuring external diameter of an object?
    A. Depth gauge
    B. Inside calliper
    C. Micrometer screw gauge
    D. Try square
    E. Vernier calliper

16. Which of the following is commonly referred to as a general purpose machine?
    A. Drilling
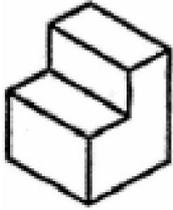   B. Lathe
    C. Miller
    D. Planer
    E. Reamer

17. Metal sheets are usually cut with
    A. dividers.
    B. power saw.
    C. scissors.
    D. sledge hammer.
    E. snips.

18. The part labelled *X* in the drawing below represents

    A. borderline.
    B. drawing board.
    C. drawing paper.
    D. tee square.
    E. title block.

19. Which of the following instruments is mainly used for measuring straight lines?
    A. French curves
    B. Pair of compasses
    C. Pair of dividers
    D. Set square
    E. Scale rule

20. A normal is at what angle to the tangent of a circle?
    A. 105°
    B. 90°
    C. 75°
    D. 60°
    E. 45°

21. Vertex point is part of a
    A. circle.
    B. circumference.
    C. cylinder.
    D. quadrant.
    E. triangle.

22.   The block below is drawn in
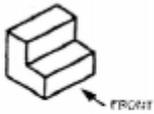

       A.   auxiliary.
       B.   freehand.
       C.   isometric.
       D.   orthographic.
       E.   perspective.

23.   Oblique drawing is drawn at ____to the horizontal plane.
       A.   20°
       B.   30°
       C.   40°
       D.   45°
       E.   60°

24.   Identify the plan of the block drawn beIow.

25.   Which of the following is a scale?
       A.   1:1
       B.   1:2
       C.   2:1
       D.   3:2
       E.   4:1

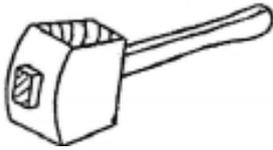26.   The drawing of a project to be produced includes
       A.   cutting list.
       B.   materials.
       C.   orthographic views.
       D.   preliminary sketches.
       E.   prototype.

27.   Wood is classified into
       A.   2
       B.   3.
       C.   4.
       D.   5
       E.   6.

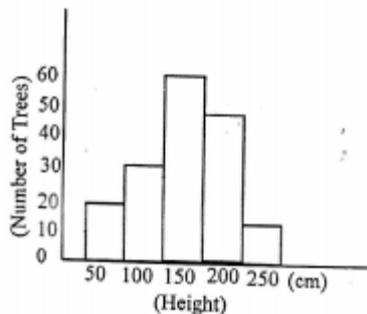28. The tool drawn below is a

    A.   chisel.
    B.   gouge.
    C.   hammer.
    D.   mallet.
    E.   plane.

29. Which of the following materials is resistant to heat and appears glazy?
    A.   Ceramic
    B.   Plastic
    C.   Rubber
    D.   Steel
    E.   Wood

30. A woodwork machine that performs multiple operations in a school workshop is
    A.   band saw.
    B.   circular saw.
    C.   drill press.
    D.   surface planer.
    E.   wood lathe.

COMPUTER STUDIES

31. The acronym "PC" stands for
    A.   Peripheral Connector.
    B.   Personal Calculator.
    C.   Personal Computer.
    D.   Processing Computer.
    E.   Professional Calculator.

32. Which of the following electronic communication channels is a substitute to letter writing?
    A.   Electronic mail
    B.   SMS
    C.   Video call
    D.   Voicemail
    E.   VoIP

33. Computers that perform multiple tasks are classified as
    A.   analog.
    B.   digital.
    C.   general purpose.
    D.   mainframe.
    E.   special purpose.

34. Google chrome is an example of a/an
    A.   antivirus software.
    B.   operating system.
    C.   search engine.
    D.   social medium.
    E.   web browser.

35. The capacity of a DVD is measured in
    A. bytes.
    B. gigabytes.
    C. kilobytes.
    D. megabytes.
    E. terabytes.

36. Where is an expansion card inserted in a computer?
    A. Connector
    B. Drive
    C. Port
    D. Slot
    E. Socket

37. Which of the following is a peripheral device?
    A. Keyboard
    B. Motherboard
    C. RAM
    D. ROM
    E. CPU

38. The graphical illustration below is a

    A. bar chart.
    B. histogram.
    C. line graph.
    D. pictogram.
    E. pie chart.

39. The acronym "SIM" stands for
    A. Subscriber Identity Module.
    B. Subscriber Interchange Modem.
    C. Subscriber International Module.
    D. System Identity Modem.
    E. System Identity Module.

40. The speed of a computer processor is measured in
    A. kilobyte.
    B. megabyte.
    C. megahertz.
    D. terabyte.
    E. watt.

NATIONAL EXAMINATIONS COUNCIL
2023 BASIC EDUCATION CERTIFICATE EXAMINATION

B8303
BASIC SCIENCE AND
TECHNOLOGY
(COMPUTER STUDIES
PRACTICAL)

45 minutes   **III**

Please do not open this question booklet until you are told to do so.
While waiting, read the following instructions carefully.

Time Allowed: 45 minutes

1.   Write your **Name**, **Registration Number**, **School Number**, **School Name** and **Subject** in the appropriate space provided on the answer sheet.

2.   Use Computer **only** to perform the task

3.   The answer to the question should be printed on a answer sheet provided

4.   Read carefully the instructions to the question.

5.   Do **not** start until the Supervisor tell you to do so

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Turn Over.

COMPUTER STUDIES PRACTICAL

INSTRUCTIONS:

      (i)   Use computer system to answer the question

      (ii)   Use Microsoft Excel to perform the task

      (iii)   No content of the candidates' work should be the same

      (iv)   You are required to prim out the hard copy(ies) of your work

Reproduce Spreadsheet document of a cost schedule as shown below and perform the underlying tasks.

		A	B	C	D	E
	1	**MONTHS**	**INCOME(₦)**	**EXPENDITURE(₦)**	**PROFIT(₦)**	**LOSS(₦)**
	2	JANUARY	2000	1500	500	-
	3	FEBRUARY	5000	3000	2000	-
	4	MARCH	3000	1000	2000	-
	5	APRIL	10000	11,000	-	1000
	6	MAY	7000	5000	2000	-
	7	JUNE				
	8	JULY				
	9	AUGUST				
	10	SEPTEMBER				
	11	OCTOBER				
	12	NOVEMBER				
	13	DECEMBER				
	14	**TOTAL**				

APPLICATION:

(i)   Provide the income values of your choice for the months of June to December   ranging between ₦3, 000 to ₦10, 000

(ii)   Provide the expenditure values of your choice for the months of June to December ranging from ₦2, 000 to ₦5, 000

Note: **The months of September and December should result in a loss to the month of April**

(iii)   Compute and key in the profit or loss for the months of June to December

Note (a)   Profit = Income-expenditure

       (b)   Loss=Expenditure-Income

(iv)   Give the formula and corresponding results of the following:

      (a)   The total income

      (b)   The total expenditure

      (c)   The sum of profits from the months of May to August   **(15 marks)**

BASIC SCIENCE AND PHYSICAL AND HEALTH EDUCATION
PAPER I 2023

1.D	7.B	13.A	19.B	25.E	31.A	37.C	43.A	49.A	55.C
2.E	8.C	14.C	20.A	26.A	32.E	38.A	44.B	50.C	56.C
3.A	9.D	15.C	21.B	27.D	33.E	39.A	45.E	51.B	57.D
4.D	10A	16.B	22.A	28.B	34.E	40.D	46.E	52C	58.A
5.E	11.C	17.E	23.B	29.A	35.C	41.D	47.C	53.B	59.D
6.A	12.A	18.B	24.E	30.E	36.E	42.A	48.A	54.C	60.C

BASIC TECHNOLOGY AND COMPUTER STUDIES
PAPER II 2023

1.C	7.A	13.C	19.E	25.B	31.C	37.A	43.A	49.E	55.A
2E	8.D	14.E	20.B	26.C	32.A	38.A	44.D	50.E	56.C
3.A	9.C	15.E	21.E	27.A	33.C	39.A	45.D	51.D	57.E
4.B	10.E	16.B	22.C	28.D	34.E	40.C	46.B	52.C	58.E
5.D	11.E	17.E	23.D	29.A	35.B	41.D	47.E	53.E	59.A
5.A	12.E	18.A	24.B	30.E	36.D	42.B	48.E	54.B	60.A