GOLDLITE ONLINE SUPPLIES

Kenya Junior School Education Assessment (KJSEA)

KJSEA SMARFOCUS QUICK REVISION SERIES

INTERGRATED SCIENCE

SERIES 1-17

For marking schemes and printable word documents inbox 0724351706

WE ALSO HAVE THE FOLLOWING

1. CBC updated notes all grades
2. CBC schemes of work all grades
3. CBC topical series all grades
4. CBC lesson plans all grades
5. CBC assessment report book all grades
6. Senior school topical exams
7. Senior school updated notes
8. Senior school schemes of work
9. Senior school lesson plans
10. Quick revision series 2025
11. Top national schools' trials
12. Prediction series 2025
13. KCSE replica series 2025
14. Termly exams 2025

For these and more inbox/text / whatsapp 0724351706/0726960003

SERIES 1
PAPER 1

1. During a practical lesson, a group of grade 8 learners were shown by their teacher the change when zinc (II) oxide is heated.

   (a) What observations did the learners make at the end of the lesson? (1 mark)

   .....

   (b) Identify the type of change that was demonstrated. (1 mark)

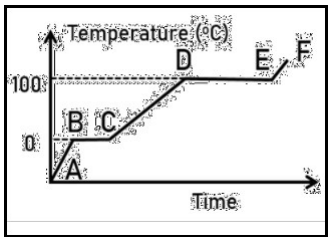
   .....

   (c) State three characteristics of the type of change stated in (a) above. (2 marks)

   .....

   .....

2. The diagram below shows the heating curve of a pure substance. Study it carefully then answer the questions that follow.



(a) Using the kinetic theory of matter, explain what happens to the substances between points A and B. (2 marks)

.....

(b) What happens to the temperature between points B and C? (1 mark)

.....

(c) What would happen to the melting point of this substance if it were contaminated with sodium chloride?..... (1 mark)

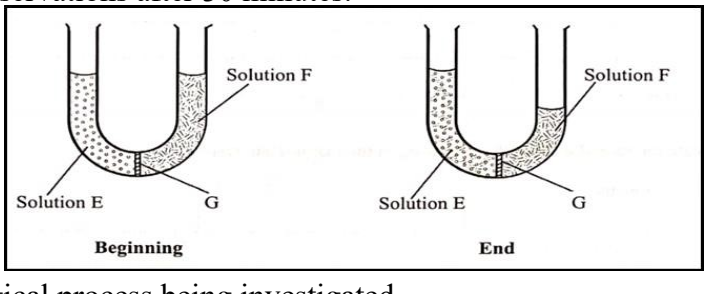
3. Gloria and Patrick carried out a practical activity on an onion epidermal cell in the science laboratory. The following are the steps they followed.

Place it on a microscope
slide. Put a coverslip over it.
Peel a very thin layer of onion skin off.
Add a few drops of iodine
solution. Draw what you see.
Place it under a microscope to view it.

The steps are not in the correct order. Help gloria and Patrick rearrange the steps in the correct order. (4 marks)

.....
.....
.....
.....
.....
.....

4. In investigating a certain physiological process, a group of grade 8 learners set up the apparatus as shown below and made the observations after 30 minutes.



(a) Name the physiological process being investigated. (1 mark)

.....

(b) Account for the observations made at the end of the experiment. (2 marks)

.....
.....

(c) State the likely identity of G. (1 mark)

.....

5. A Grade 8 learner was using a light microscope to view onion cells. If the eye piece lens magnification was × 10 while the objective lens he used was × 40, calculate the total magnification. (3 marks)

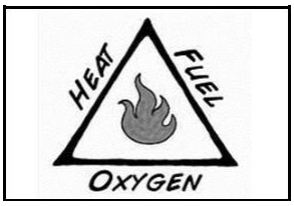
.....
.....
.....

6. A group of learners were tasked by their teacher to classify the following changes as either chemical or physical. Souring of milk, heating glass until it melts, adding common salt to water, rusting of rooftops, striking a matchstick and heating hydrated copper (II) sulphate.

Classify the changes as either physical or chemical. (3 marks)

Physical changes	Chemical change

7. A Grade 8 learner was tasked by his teacher to draw a fire triangle. The figure below shows what the learner drew.



(a) What mistake did the learner made? (1 mark)

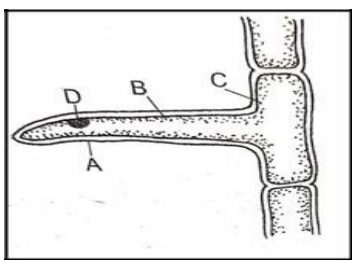
.....

(b) Draw the correct fire triangle. (2 marks)

.....

.....

8. The diagram below shows a specialised plant cell. Study it carefully and then answer the questions that follow.



(a) Name the cell. ..... (1 mark)

(b) Name the parts labelled A, B, C and D. (2 marks)

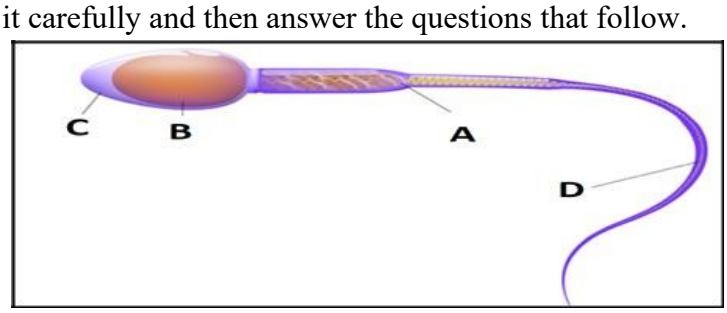
.....

.....

(c) State the function of the part labelled D. (1 mark)

.....

9. Mutie came across the following specialised cell when carrying out his research using print media resources. Study it carefully and then answer the questions that follow.



(a) Identify the parts labelled A, B, C and D. (2 marks)

.....

.....

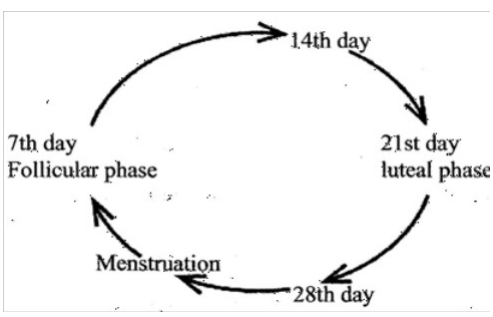
(b) State the importance of the part labelled A in the above cell. (1 mark)

.....

(c) How is the cell illustrated above involved in the process of fertilisation? (1 marks)

.....

10. The illustration below shows a summary of the main phases of the human menstrual cycle.



(a) Name the process that takes place around the 14th day. (1 mark)

.....

(b) Under which two conditions would the cycle be interrupted? (2 marks)

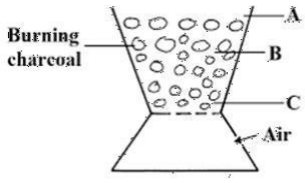
.....

.....

(c) Apart from pain and irregular periods, name one other challenge related to the menstrual cycle.

..... (1 mark)

11. Halima and Rashid saw their mother lighting a jiko as shown in the picture below.



(a) Write two-word equations of the reaction likely to take place at the regions labelled A and B.

..... (2 marks)

(b) Identify the type of change that takes place when burning charcoal. ..... (1 mark)

12. Three learners in Grade 8 were discussing the symbol of different elements. They wrote the following in their notebooks.

Lead – Au
Iron – Fe
Gold – Ag
Copper - Co
Sodium – Na
Aluminium - Ai

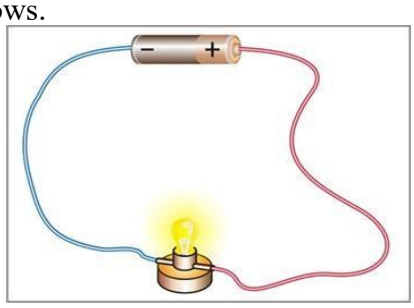
(a) Which of the above elements were their symbols wrongly written? (2 marks)

(b) Write the symbols in (a) above correctly. (2 marks)

13. Grade 8 learners used their digital devices connected to the internet to search for information on symptoms of HIV and AIDS and how it can be prevented. What information are they likely to find?

..... (4 marks)

14. The photograph below shows the energy transformation in an electrical circuit. Study it and then answer the question that follows.



Describe the energy transformation taking place in the picture above. (2 marks)

SERIES 2

PAPER 1

1. Calcium has an atomic number = 20. Determine:

a.) The number of electrons in calcium. **(1mk)**

_____

b.) Its electronic arrangement. **(2mks)**

_____

c.) Its electronic structure. **(3mks)**

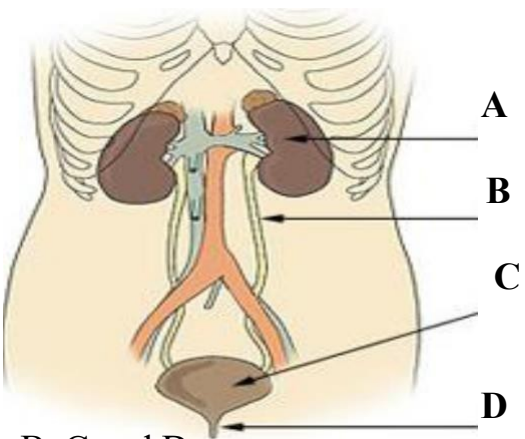
2. Define the term compressibility. **(2mks)**

_____

_____

_____

3. Mwalimu Moses brought a chart shown below in grade 7. He asked the learners to name the parts labeled by the letter as shown in the chart.



a.) Name the parts labeled A, B, C and D. **(4mks)**

A _____

B _____

C _____

D _____

b.) Write down four healthy lifestyle practices that keeps part A healthy. **(4mks)**

_____

_____

_____

c.) Which part:

i. Temporarily stores urine. **(1mk)**

_____

ii. Carry urine form the kidney to the bladder. **(1mk)**

_____

d.) State four excretory waste products required to be eliminated from the body. **(4mks)**

_____ _____

_____ _____

e.) Name any three disorders that affects part labeled A. **(2mks)**

_____

_____

5. Grade 8 learners from a certain school set an experiment using a peeled potato as shown below. Use it to answer the questions that follow.

a.) Name the process being investigated through the set up above. **(1mk)**

_____

b.) Why was it necessary to peel off the potato before using it in the experiment. **(2mks)**

_____

_____

c.) State the two observations after the experiment was set up. **(2mks)**

_____

_____

_____

c.) Explain the observations in (b) above. **(2mks)**

_____

_____

e.) Explain the results in case the learners used a boiled potato. **(2mks)**

_____

_____

6.

a.) What are metalloids? **(2mks)**

_____

_____

b.) Name two examples of metalloid. **(2mks)**

_____ _____

7.

a.) Give two main reasons for making metal alloys. **(2mks)**

_____

_____

b.) Give one common use of the following metals. **(2mks)**

i. Aluminium _____

ii. Copper _____

8.

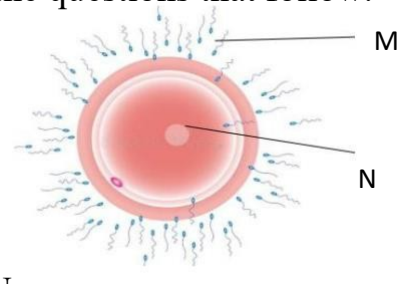
a.) For rusting to occur, there must be _____ and _____ **(2mks)**

b.) State four ways used to prevent rusting. **(4mks)**

_____ _____

_____ _____

9. Use the picture below to answer the questions that follow.



a.) Name the parts labelled **M** and **N**. **(2mks)**

M_____ N _____

c.) Identify the process that takes place when the two parts meet. **(1mk)**

_____

SERIES 3

PAPER 1

SECTION A: (30 Marks)

1. Which of the following substances is corrosive?

A. Sugar B. Vinegar
C. Bleach D. Cooking Oil

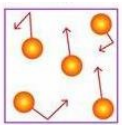
2. Which of the following is a reason for studying Integrated Science?
   A. To understand history
   B. To become a musician
   C. To understand nature and solve problems
   D. To memorize facts
3. Identify the correct chemical symbols:
   A. He, Na, Ca, Br B. Ho, Ne, Mg, Cl
   C. H, Na, Al, Si D. H, N, Al, Ag
4. Which of the following consists only of compounds?
   A. Oxygen and Water
   B. Water and Carbon Dioxide
   C. Carbon and Oxygen
   D. Sodium and Hydrogen
5. Which of the following are homogeneous mixtures?
   A. Sand and Water, Oil and Water
   B. Sugar and Water, Milk and Water
   C. Salt and Sand, Flour and Water
   D. Vinegar and Oil, Flour and Oil
6. Which of the following are metals?
   A. Calcium and Sodium

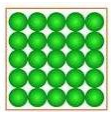
B. Carbon and Oxygen

C. Sulfur and Nitrogen

D. Chlorine and Fluorine

7. Which diagram represents the arrangement of particles in air and

A  B 

C  D 

8. Which of the following will not help in controlling fire?

A. Turning on the fire alarm

B. Using a fire extinguisher

C. Removing flammable materials

D. Pouring water on a fire

9. Which methods can make hard water lather easily?

A. Filtering the water

B. Boiling the water and adding washing soda

C. Adding salt

D. Stirring the water

10. Which of the following are physical changes?

A. Burning wood and boiling water

B. Rusting iron and melting ice

C. Water becoming ice and drying of wet clothes

D. Cooking food and dissolving sugar in water

11. Which of the following are applications of bases?

A. Vinegar and Baking Powder

B. Lemon Juice and Soap

C. Toothpaste and Baking Powder

D. Vinegar and Washing Soda

12. What is the function of the testes in males?

A. Producing hormones and sperms

B. Carrying urine out of the body

C. Producing eggs

D. Holding urine

13. Which of the following is a characteristic change in boys only during puberty?

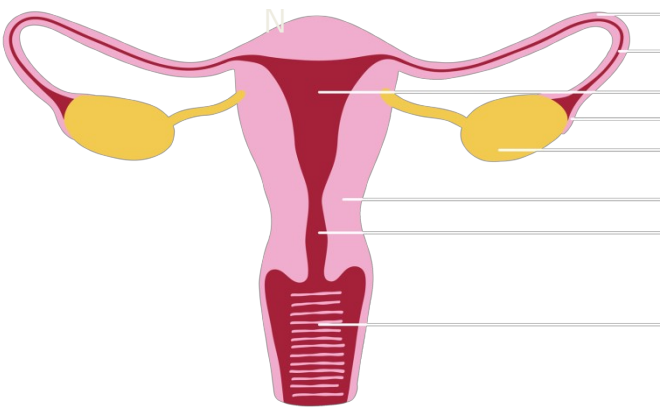
A. Hips widen

B. Breasts enlarge

C. Voice deepens

D. Hair grows under armpits

14. Part N in the female reproductive system is known as:



A. Fallopian Tube B. Vagina

C. Ovary D. Uterus

15. Fertilization occurs in which part of the female reproductive system?

A. Oviduct B. Uterus

C. Vagina D. Ovary

16. The best way to manage mood swings during adolescence is:

A. Isolating yourself

B. Watching TV all day

C. Doing physical exercises regularly

D. Ignoring emotions

17. Which organ temporarily stores urine?

A. Kidney B. Ureter

C. Bladder D. Urethra

18. The function of the kidney is to:

A. Absorb nutrients

B. Filter waste from blood

C. Store urine

D. Remove sweat

19. The part of the skin that produces sweat is:
    A. Hair follicle B. Fat layer
    C. Oil gland D. Sweat gland
20. What is the function of the epidermis in the skin?
    A. Protecting against physical injury
    B. Storing fat
    C. Producing sweat
    D. Storing blood
21. Where is most water absorbed in the digestive system?
    A. Stomach B. Large intestine
    C. Small intestine D. Liver
22. Chisel-shaped teeth are used for:
    A. Tearing food B. Cutting food
    C. Grinding food D. Chewing food
23. Which of these is an unhealthy habit for kidney health?
    A. Drinking enough water
    B. Eating fruits and vegetables
    C. Exercising regularly
    D. Eating too much sugary food
24. A freely suspended bar magnet always aligns itself in which direction?
    A. East-West B. North-South
    C. Up-Down D. Randomly
25. A magnet can attract which object?
    A. Wooden block B. Iron nail
    C. Rubber ball D. Glass sheet
26. Which of the following is a renewable energy source?
    A. Coal B. Natural gas
    C. Geothermal D. Petrol
27. In which electric circuit will a bulb not light?

28. Which of the following is a safe electrical practice?
    A. Operating appliances with wet hands
    B. Overloading sockets
    C. Repairing broken wires yourself
    D. Switching off appliances when not in use
29. What is the function of the placenta in pregnancy?
    A. It stores waste
    B. It protects the baby from injury
    C. It supplies oxygen and nutrients to the baby
    D. It helps in fertilization
30. Which of the following causes rusting in iron?
    A. Heat and electricity
    B. Oxygen and moisture
    C. Cold and pressure
    D. Fire and sunlight

SECTION B:

31. (a) Name any one laboratory safety rules. (1 mark)

_____

_____

(b) Explain why it is important to wear a lab coat during experiments. (1 mark)

_____

_____

32. (a) Differentiate between a chemical change and a physical change. (2 marks)

_____

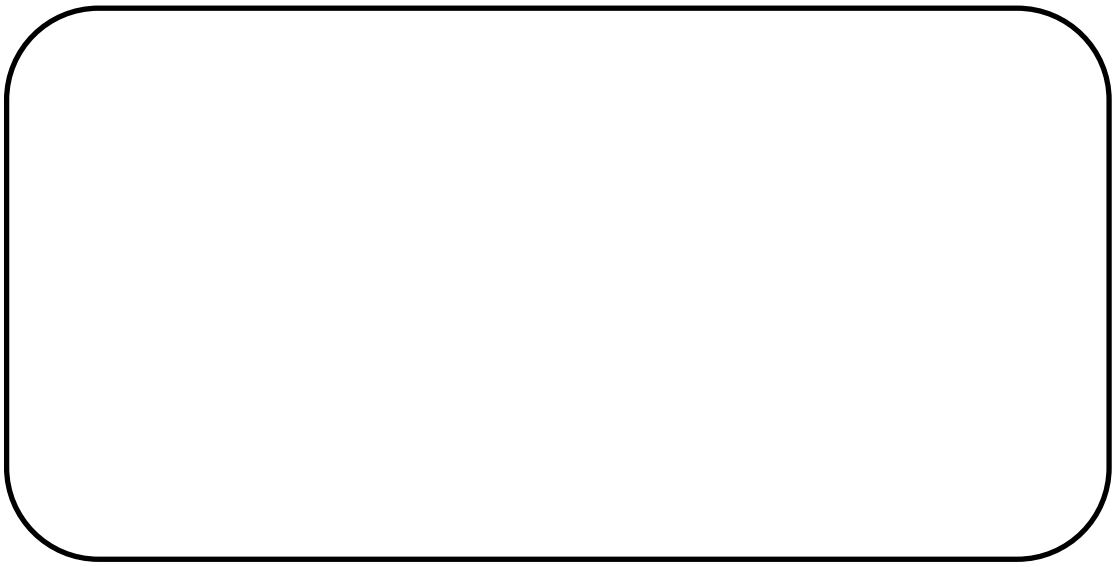
_____

(b) Give two examples of each. (2 marks)

_____

_____

33. Draw and label a simple electric circuit containing a bulb, battery, and switch. (5 marks)



34. (a) Name one diseases of the urinary system. (1 mark)

_____

_____

35. (a) What is the function of the small intestine in digestion? (2 marks)

_____

_____

(b) Name one digestive enzyme and state their functions. (1 mark)

_____

_____

36. (a) Name one non-magnetic material. (1 mark)

_____

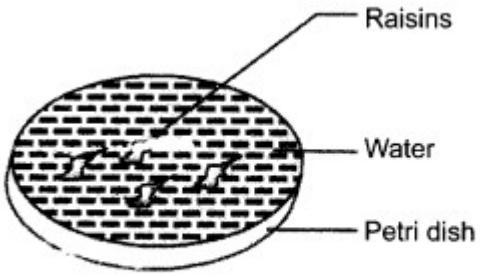
_____

(b) State one uses of magnets in everyday life. (1 mark)

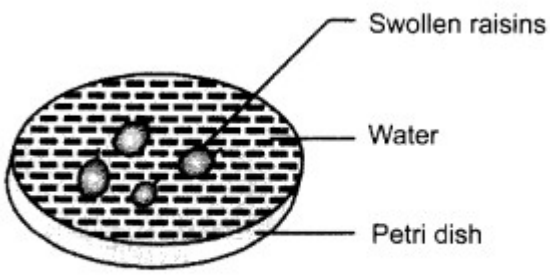
_____

_____

37. A student placed a raisin in a beaker of water and left it overnight. The next day, the raisin had swollen.



Raisins in water
(Initial stage)



Swollen raisins in water
(Final stage after hours of soaking)

(a) Name the process that caused the raisin to swell. (1 mark)

_____

(b) Explain how this process occurred. (1 mark)

_____

_____

(c) What would happen if the raisin were placed in a strong sugar solution instead of water? Explain. (1 mark)

_____

_____

38. In a perfume shop, a customer sprayed perfume on one side of the room, and within a few seconds, people on the other side could smell it.

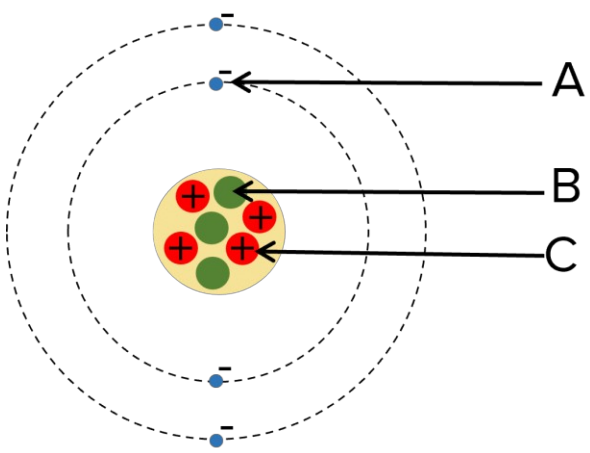
(a) What process is responsible for the movement of the perfume molecules? (1 mark)

_____

(b) State two factors that affect the rate of this process. (2 marks)

(c) Why does diffusion occur faster in gases than in liquids? (2 marks)

39. During a science lesson, a teacher drew a diagram of an atom on the board. The diagram had a nucleus and several particles orbiting it.



(a) Name the three subatomic particles of an atom. (3 marks)

(b) Which subatomic particle carries a negative charge? (1 mark)

(c) Where in the atom are protons found? (1 mark)

40. A scientist examined the electron arrangement of an element with atomic number 12.

(a) Write the electron configuration of this element. (1 mark)

(b) Which group in the periodic table does this element belong to? (1 mark)

_____

(c) Why is it classified as a metal? (2 marks)

_____

(d) How many valence electrons does it have? (1 mark)

_____

_____

41. During a nature walk, students collected different types of leaves and observed their internal structure under a microscope.

(a) Which internal structure of the leaf contains chlorophyll? (1 mark)

_____

(b) State two functions of the stomata in a leaf. (2 marks)

_____

_____

(c) What is the role of the veins in a leaf? (2 marks)

_____

_____

SERIES 3

PAPER 2

QUESTION ONE: TESTING ACIDS, BASES, AND NEUTRAL SOLUTIONS (20 Marks)

You are provided with:

a) Solutions A, B, C, D, and E (unknown solutions)
b) Solution X (Indicator)
c) Lemon juice (acidic solution)
d) Wood ash solution (basic solution)
e) Test tubes

Procedure:

(a) Indicator Test for Acids and Bases

1. Add 2 cm^3 of Solution X to 5 cm^3 of lemon juice in a test tube and record the observed color change.
2. Add 2 cm^3 of Solution X to 5 cm^3 of wood ash solution and record the observed color change.
3. Add 2 cm^3 of Solution X to 5 cm^3 of each test solution (A, B, C, D, and E) one at a time and record the observed color change.

Table for Observations and Conclusions

Substance	Observation (Color Change)	Conclusion (Acidic, Basic, or Neutral)
Lemon juice + Solution X		
Wood ash solution + Solution X		
Test Solution A + Solution X		
Test Solution B + Solution X		
Test Solution C + Solution X		
Test Solution D + Solution X		

Substance	Observation (Color Change)	Conclusion (Acidic, Basic, or Neutral)
Test Solution E + Solution X		

(b) Alternative Solutions

(i) Name one solution that could be used instead of lemon juice. (1 mark)

_____

(ii) Name one solution that could be used instead of wood ash solution. (1 mark)

_____

(c) Basic Science Skills Used (3 marks)

Name three basic science skills necessary to carry out this practical.

1. _____
2. _____
3. _____

(d) Safety Precautions (2 marks)

State two safety precautions taken during this practical.

1. _____
2. _____

(e) Laboratory Equipment Used (3 marks)

Name three pieces of laboratory equipment used in this practical.

1. _____
2. _____
3. _____

QUESTION TWO: MEASURING DIMENSIONS AND VOLUME OF A WOODEN BLOCK (10 Marks)

You are provided with:

a) A ruler
b) A wooden block

Procedure:

(a) Measure the dimensions of the wooden block

1. Width: _____ cm (1 mark)
2. Length: _____ cm (1 mark)
3. Height: _____ cm (1 mark)

(b) Physical Quantities

(i) State the type of physical quantity represented by length. (1 mark)

_____

(ii) Give a reason for your answer in (i) above. (1 mark)

_____

(c) Calculate the Volume

Determine the volume of the wooden block in cm^3 using the formula:

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

Volume = _____ cm^3 (3 marks)

(d) SI Unit of Volume

Express the volume of the wooden block in SI units. (2 marks)

SERIES 4

PAPER 1

SECTION A: (30 Marks)

Choose the correct answer

1. What is the smallest unit of an element that retains the properties of that element?
   A) Molecule B) Atom
   C) Compound D) Ion

2. What is the chemical symbol for **sodium**?
   A) S B) Na C) So D) N

3. Which of the following is a compound?
   A) Oxygen B) Hydrogen
   C) Water D) Iron

4. Which gas is used in respiration?
   A) Carbon dioxide B) Oxygen
   C) Nitrogen D) Hydrogen

5. Which process best describes a **physical change**?
   A) Burning wood B) Melting ice
   C) Rusting of iron D) Digestion of food

6. The kinetic theory of matter states that:

   A) Matter is made up of moving particles
   B) Matter is fixed and does not change
   C) All matter is liquid
   D) Particles do not have energy

7. What happens to the boiling point of water when impurities are added?
   A) Increases B) Decreases
   C) Remains the same D) Disappears

8. Which of the following represents a **permanent change**?
   A) Melting wax B) Freezing water
   C) Rusting iron D) Evaporating water

9. The fire triangle consists of:
   A) Fuel, water, and heat
   B) Oxygen, fuel, and heat
   C) Carbon, nitrogen, and hydrogen
   D) Heat, water, and carbon dioxide

10. What is used to measure the acidity or alkalinity of a substance?
    A) Litmus paper
    B) Thermometer
    C) Stopwatch

D) Measuring cylinder

11. Which laboratory apparatus is used to measure volume accurately?
    A) Beaker
    B) Test tube
    C) Graduated cylinder
    D) Bunsen burner

12. Which organ filters waste from the blood?
    A) Liver B) Kidney
    C) Heart D) Lungs

13. The male reproductive cells are called:
    A) Ova B) Sperm
    C) Embryo D) Zygote

14. What is the SI unit of force?
    A) Pascal B) Newton
    C) Joule D) Watt

15. What is the formula for density?
    A) Mass × Volume
    B) Volume / Mass
    C) Mass / Volume
    D) Force × Distance
16. Which part of a plant cell is responsible for photosynthesis?
    A) Nucleus B) Mitochondria
    C) Chloroplast D) Cytoplasm

17. **The microscope part used to focus on an object is:**
    A) Objective lens
    B) Fine adjustment knob
    C) Stage
    D) Eyepiece

18. What is the **function of a Bunsen burner** in the laboratory?
    A) To measure temperature
    B) To heat substances
    C) To cool substances

19. **The movement of molecules from a high concentration to a low concentration is called:**
    A) Diffusion
    B) Osmosis
    C) Respiration
    D) Photosynthesis

20. Which **energy transformation** occurs in a solar panel?
    A) Electrical to chemical
    B) Light to electrical
    C) Heat to mechanical
    D) Chemical to light

D) To magnify objects

SECTION B: STRUCTURED QUESTIONS (40 Marks)

Answer all the questions.

21. (a) Draw and label the structure of an atom. (3 marks)

(b) Define **atomic number** and **mass number**. (2 marks)

22. (a) Name two differences between **metals** and **non-metals**. (2 marks)
a.

(b) List any two alloys and their compositions. (2 marks)

23. (a) Explain two **effects of impurities on boiling and melting points**. (4 marks)

(b) State two differences between **hard water** and **soft water**. (2 marks)

24. (a) Describe the **structure of a leaf** and its functions. (4 marks)

(b) List three conditions necessary for **photosynthesis**. (3 marks)

25. (a) State two **differences between an animal and a plant cell**. (2 marks)

(b) Draw and label a simple microscope. (3 marks)

26. (a) What are **three challenges of menstruation** faced by girls? (3 marks)

(b) Give two symptoms of **sexually transmitted diseases**. (2 marks)

27. (a) Explain the **role of diffusion and osmosis** in living organisms. (4 marks)

(b) What is the **importance of fertilization** in reproduction? (2 marks)

28. (a) Define **renewable energy** and **non-renewable energy**. (2 marks)

(b) Give two examples of each type. (2 marks)

29. (a) Define **pressure** and give its SI unit. (2 marks)

(b) Explain how **friction** affects motion. (2 marks)

(b) Why is the **fire triangle** important in fire safety? (2 marks)

SERIES 4

PAPER 2

TASK 1: IDENTIFICATION AND TESTING OF SUBSTANCES (20 Marks)

Instructions:

a) You will be given **three unknown substances (A, B, and C)**.
b) Your task is to identify their **physical and chemical properties** using simple laboratory tests.

Materials Provided:

a) Beaker
b) Test tubes
c) Litmus paper (red and blue)
d) Bunsen burner
e) Water
f) Dilute hydrochloric acid
g) Magnesium ribbon
h) Universal indicator

Procedure and Questions:

1. **Observing Physical Properties (4 Marks)**

    a) Observe the appearance of substances A, B, and C.
    b) Record their **color, state (solid, liquid, or gas), and texture**.

2. **Solubility Test (4 Marks)**

    a) Take a small amount of each substance and dissolve it in water.
    b) Record whether the substances are **soluble or insoluble**.

3. **Acidity and Basicity Test (4 Marks)**

    a) Dip both **red and blue litmus papers** into separate solutions of A, B, and C.
    b) Record the color changes and determine whether each substance is **acidic, basic, or neutral**.

4. **Reaction with Hydrochloric Acid (4 Marks)**

a) Add **dilute hydrochloric acid** to each substance.
b) Observe for bubbles (effervescence), which indicate the presence of **carbonates or metals**.
c) Write a conclusion on which substance is likely to be a **metal, a carbonate, or neutral**.

5. **Flame Test for Metals (4 Marks)**

a) Using a Bunsen burner, place a small portion of each sample into the flame.
b) Observe the flame color and identify if the substance contains **sodium, copper, or potassium**.

TASK 2: MICROSCOPY AND CELL IDENTIFICATION (10 Marks)

Instructions:

a) You will be provided with a **microscope and a prepared slide** containing a **plant or animal cell**.
b) Follow the procedure below and answer the questions.

Procedure and Questions:

1. **Setting up the Microscope (3 Marks)**

a) Properly adjust the microscope to **low power magnification**.
b) Identify the **objective lens, eyepiece, and stage**.
c) Focus the slide clearly.

2. **Cell Observation (3 Marks)**

a) Observe the cell structure and draw a labeled diagram.
b) Identify whether it is a **plant or animal cell**.

3. **Magnification Calculation (2 Marks)**

a) If the eyepiece lens is **×10** and the objective lens is **×40**, calculate the **total magnification** used.
b) Formula: **Total magnification = Eyepiece magnification × Objective magnification**.

4. **Differences Between Plant and Animal Cells (2 Marks)**

a) List **two differences** between plant and animal cells based on your observation.

SERIES 5

PAPER 1

SECTION A: (30 MARKS)

1. Identify the laboratory apparatus marked A.
   A. Holder
   B. Stand
   C. Clamp
   D. Grippe
2. Identify the part of the Bunsen burner marked B.
   A. Chimney
   B. Collar
   C. Flame
   D. Airhole
3. The first element of the periodic table is:
   A. Lithium
   B. Beryllium
   C. Hydrogen
   D. Helium
4. Which of the following is NOT an inert gas?
   A. Oxygen
   B. Argon
   C. Helium
   D. Neon
5. Grade 9 learners wrote the symbols of various elements:
   - Claire: Nitrogen - N
   - Mercy: Sodium - Na
   - Jacqueline: Calcium - K
   - Andrea: Magnesium - Mg

   Whose answer was incorrect?
   A. Claire
   B. Mercy
   C. Jacqueline
   D. Andrea
6. The property of metals that makes them reflect light is called:
   A. Lustre
   B. Reflection
   C. Refraction
   D. Shining
7. What happens when a metal rod is heated in an experiment?
   A. The metal rod expands and bursts.
   B. Apparatus A melts down.
   C. The wax melts instantly, and the pin falls down.
   D. The wax melts after some time, and the pin falls down.
8. Which method of preventing rusting involves coating iron objects with a thin layer of chromium or tin using electricity?
   A. Electroplating
   B. Plastic coating
   C. Galvanizing
   D. Sacrificial protection

9. A learner studied the pH of different substances:

Substance pH

Q 4

Substance	pH
P	7
R	14
S	10
T	1

Which substance is most likely to be sulphuric acid?

A. P
B. R
C. S
D. T

10. Which substance is most likely to be hydrogen hydroxide (water)?
    A. P
    B. R
    C. S
    D. T

11. Identify the type of microscope drawn below. *(Diagram required)*
12. Which part of a microscope quickly brings the image into rough focus?
    A. Fine adjustment knob
    B. Coarse adjustment knob
    C. Body tube
    D. Nose piece
13. What is the process by which plants make their own food using sunlight?
    A. Respiration
    B. Digestion
    C. Photosynthesis
    D. Transpiration
14. Which of the following is found in both plant and animal cells, **except**:
    A. Vacuole
    B. Nucleus
    C. Cytoplasm
    D. Cell membrane
15. The root drawn below is most likely to be from: *(Diagram required)*
    A. Sorghum
    B. Maize
    C. Beans
    D. Sugarcane

16. Which of the following is a proper hygiene practice for maintaining healthy hair?
    A. Not combing hair to avoid damage.
    B. Using excessive amounts of hair styling products.
    C. Washing hair regularly with appropriate shampoo.
    D. Sharing combs with others.
17. Which of the following is NOT an advantage of hard water?
    A. It has calcium salts that help in the development of healthy teeth.
    B. It is good for animals that lay eggs since calcium is needed for eggshells.
    C. It prevents lead from dissolving in water pipes.
    D. It leads to mineral deposits that reduce water flow and energy efficiency.

18. In males, where is sperm produced?
    A. Seminal vesicle
    B. Epididymis
    C. Prostate gland
    D. Testes

19. What is the role of brushing teeth regularly?
    A. To prevent cavities and gum disease.
    B. To strengthen the teeth.
    C. To whiten teeth.
    D. To improve overall health.
20. Which hormone is primarily responsible for the development of male secondary sexual characteristics?
    A. Estrogen
    B. Progesterone
    C. Testosterone
    D. Oxytocin
21. What is the function of the menstrual cycle?
    A. To produce sperm
    B. To prepare the body for pregnancy
    C. To produce eggs
    D. To regulate body temperature
22. Which structure prevents food from entering the trachea when swallowing?
    A. Uvula
    B. Epiglottis
    C. Esophagus
    D. Pharynx
23. Which part of the male reproductive system adds fluid to sperm to form semen?
    A. Prostate gland
    B. Seminal vesicles
    C. Bulbourethral gland
    D. All of the above
24. Which enzyme in saliva helps break down carbohydrates?
    A. Pepsin
    B. Protease
    C. Lipase
    D. Amylase

25. Which of the following gases is responsible for global warming?
A. Nitrogen B. Oxygen C. Carbon dioxide D. Helium

26. What is the SI unit of force?
A. Watt B. Newton C. Joule D. Pascal

27. The **boiling point of pure water** at sea level is:
A. 0°C B. 50°C C. 100°C D. 212°C

28. Which of the following is an example of a **non-renewable** energy source?
A. Solar energy B. Wind energy C. Coal D. Hydroelectric power

29. Which of the following **cells** lacks a nucleus?
A. Liver cell B. Red blood cell C. Muscle cell D. Plant cell

30. The part of the digestive system responsible for **nutrient absorption** is the:
A. Stomach B. Large intestine C. Small intestine D. Esophagus

SECTION B: (40 MARKS)

(Answer all the questions in the spaces provided.)

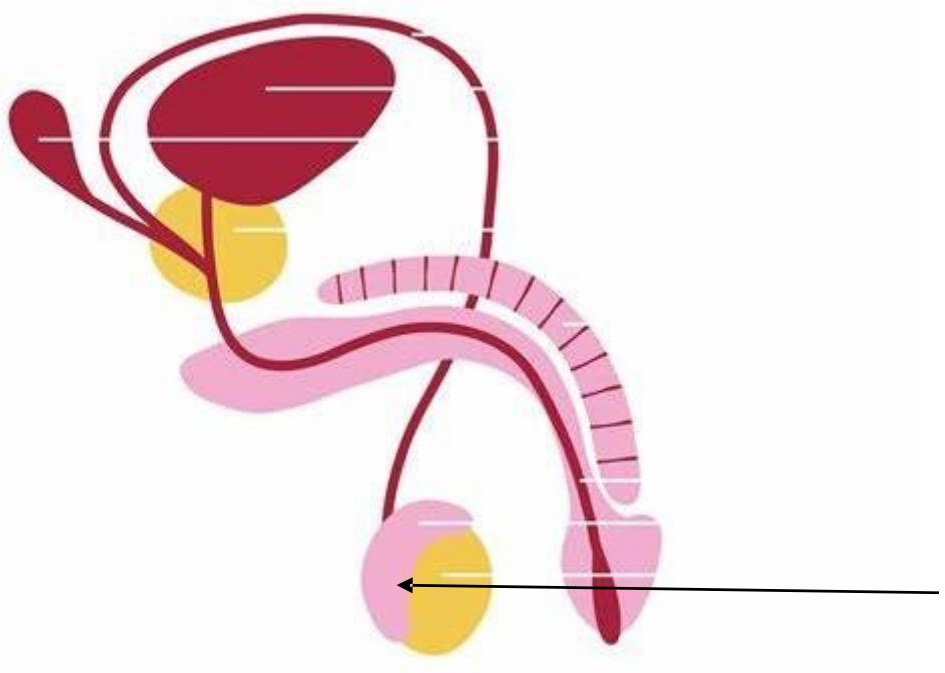
31. (a) Define an atom and name its three main subatomic particles. *(2 marks)*

(b) The atomic number of **potassium (K)** is **19.** Draw or describe its **electron arrangement.** *(2 marks)*

32. The following table classifies **elements** into **metallic and non-metallic** elements. Fill in the missing elements. *(6 marks)*

Metallic Elements	**Non-metallic Elements**
i) Sodium (Na)	iv) _____
ii) _____	v) Oxygen (O)
iii) Iron (Fe)	vi) _____

33. The diagram below represents the **male reproductive system.** Study it and answer the questions that follow. *(5 marks)*



X

(a) Name the part labeled **X**. *(1 mark)*

(b) What is the function of the **penis**? *(2 marks)*

(c) How is the **sperm cell adapted** to its function? *(2 marks)*

34. The table below shows the pH values of different substances. Study it and answer the questions that follow. *(5 marks)*

Substance	**pH**
Q	4
P	7
R	14
S	10
T	1

(a) Which substance is most likely to be **sulphuric acid**? *(1 mark)*

(b) Which substance is most likely to be **pure water**? *(1 mark)*

(c) Which substance is most likely to be **sodium hydroxide**? *(1 mark)*

(d) Identify the **weak acid** in the table. *(1 mark)*

(e) Identify the **weak base** in the table. *(1 mark)*

35. The diagram below represents a **microscope.** Study it and answer the questions that follow. *(5 marks)*

(a) Identify the part labeled **M**. *(1 mark)*

(b) Which part **quickly** brings the image into rough focus? *(1 mark)*

(c) What is the function of the **objective lenses**? *(1 mark)*

(d) State one difference between a **light microscope** and an **electron microscope**. *(2 marks)*

SERIES 5

PAPER 2

QUESTION ONE (20 Marks)

TASK 1 (20 MARKS)

You have been provided with:
i. A beaker
ii. A tripod stand
iii. A source of heat
iv. A stopwatch
v. Solution X

The following observations were made:

Time (Minutes)	Crystals begin to form	Crystals are halfway formed	All the liquid has evaporated
k			

a) What is the method of separation used in the experiment? (2 marks)

_____
_____

b) The crystals that form on the beaker are most likely to be those of what substance? (2 marks)

_____
_____

c) What conclusions can be made about Liquid X? (2 marks)

_____
_____
_____

d) Apart from the method used in the experiment, name any other four methods of separation. (8 marks)

_____
_____
_____
_____
_____

e) Explain why heating was necessary in this experiment. (2 marks)

_____
_____
_____

f) Suggest one real-life application of this separation method. (2 marks)

_____
_____
_____

g) How can you improve the accuracy of the experiment? (2 marks)

_____
_____

TASK 2 (10 MARKS)

You are provided with the following:
i. A detergent
ii. A bottle top
iii. Mixing containers
iv. Liquid Y
v. Liquid Z

Use the procedure below to carry out the experiment:

a) Pour Liquid Y into the mixing container.
b) Add a bottle top of detergent and mix well using your hand until a white substance is formed.

a) What happens when you mix Liquid Y with the detergent? (2 marks)

_____
_____

d) Pour Liquid Z into the mixing container.
e) Add a bottle top of detergent and mix well using your hand until a white substance is formed.

b) What happens when you mix Liquid Z with the detergent? (2 marks)

_____
_____

c) From the experiment above, what can we conclude? (2 marks)

_____
_____

d) What type of liquid is Liquid Y? (2 marks)

_____
_____

e) State two advantages of using Liquid Z over Liquid Y. (2 marks)

_____
_____
_____
_____

SERIES 6

PAPER 1

SECTION A: (40 Marks)

1. Which of the following is a safety rule in the laboratory?
   A. Tasting chemicals to identify them
   B. Wearing safety goggles when handling chemicals
   C. Running in the laboratory
   D. Leaving spills unattended
2. The best method to separate iron filings from a mixture of sand and iron is:
   A. Filtration
   B. Evaporation
   C. Magnetic separation
   D. Decantation
3. The process of a solid changing directly to gas is called:
   A. Condensation B. Sublimation
   C. Evaporation D. Melting
4. A base turns red litmus paper:
   A. Blue
   B. Green
   C. Yellow
   D. Orange
5. Which of these substances is an example of a base?
   A. Lemon juice
   B. Vinegar
   C. Soap
   D. Orange juice
6. The main function of white blood cells in the human body is to:
   A. Carry oxygen
   B. Fight infections
   C. Carry carbon dioxide
   D. Transport nutrients
7. The part of the digestive system responsible for nutrient absorption is the:
   A. Stomach
   B. Large intestine
   C. Small intestine
   D. Liver
8. A doctor observed that a patient had not been taking meals rich in vitamin C. Which disease is caused by a lack of vitamin C?
   A. Rickets
   B. Scurvy
   C. Beriberi
   D. Kwashiorkor
9. During a clinic checkup, a doctor diagnosed a patient with a certain symptom. The main symptom of malaria is:
   A. Coughing
   B. High fever and chills
   C. Rash on the skin
   D. Swollen joints
10. Which of the following materials is a conductor of electricity?
    A. Plastic B. Wood
    C. Copper D. Rubber
11. A force that opposes motion is called:
    A. Gravity
    B. Friction
    C. Magnetic force
    D. Electrostatic force

12. The part of the female reproductive system where fertilization occurs is the:
    A. Uterus
    B. Ovary
    C. Fallopian tube
    D. Vagina
13. Which gas is necessary for combustion to take place?
    A. Carbon dioxide
    B. Oxygen
    C. Nitrogen
    D. Hydrogen
14. Which of the following is an example of a non-metal?
    A. Aluminum
    B. Copper
    C. Sulfur
    D. Silver
15. The best method to separate salt from seawater is:
    A. Filtration
    B. Evaporation
    C. Sieving
    D. Decantation
16. Which of the following is an example of a compound?
    A. Oxygen
    B. Hydrogen
    C. Water
    D. Gold
17. The smallest unit of an element that retains its properties is called a:
    A. Molecule B. Atom
    C. Proton D. Electron
18. Diffusion is the movement of molecules from:
    A. A low concentration to a high concentration
    B. A high concentration to a low concentration
    C. A cell to another cell
    D. A semi-permeable membrane
19. Which part of a plant cell is responsible for photosynthesis?
    A. Cell wall B. Chloroplast
    C. Nucleus D. Mitochondria
20. The function of red blood cells is to:
    A. Fight infections
    B. Transport oxygen
    C. Produce energy
    D. Digest food
21. The human organ responsible for filtering blood is:
    A. Lungs B. Kidney
    C. Liver D. Heart
22. Osmosis is the movement of:
    A. Gases across a semi-permeable membrane
    B. Water molecules from a dilute solution to a concentrated solution
    C. Solutes from high concentration to low concentration
    D. None of the above
23. Which gas do plants take in during photosynthesis?
    A. Oxygen
    B. Carbon dioxide
    C. Nitrogen
    D. Hydrogen
24. The energy used in photosynthesis comes from:

A. The soil

B. The sun

C. The roots

D. Carbon dioxide

25. The semi-permeable membrane in a cell allows:

A. All substances to pass through

B. Only water to pass through

C. Certain substances to pass while blocking others

D. No substance to pass through

26. You enter the science laboratory and notice a spilled chemical on the table. What should you do?

A. Ignore it

B. Smell it to identify the chemical

C. Report to the teacher immediately

D. Wipe it with bare hands

27. A learner forgot to label a chemical bottle in the laboratory. Why is labeling important?

A. To make the bottle look neat

B. To prevent confusion and accidents

C. To make it easy to pour the chemical

D. To make the shelf look organized

28. What is the most important safety rule when handling flames in the laboratory?

A. Keep flammable materials away

B. Blow the flame out when done

C. Use your hands to test for heat

D. Heat chemicals directly

29. Which apparatus is best used to measure precise volumes of liquid?

A. Beaker

B. Measuring cylinder

C. Conical flask

D. Test tube

30. Which of the following is an example of a physical change?

A. Burning paper

B. Rusting of iron

C. Melting of ice

D. Cooking an egg

31. When a substance changes from a liquid to a gas, the process is called:

A. Condensation

B. Evaporation

C. Freezing

D. Sublimation

32. Which of the following is a pure substance?

A. Saltwater

B. Air

C. Gold

D. Orange juice

33. The best method for separating salt from seawater is:

A. Filtration

B. Evaporation

C. Sieving

D. Decantation

34. Which of the following is a property of acids?

A. They taste bitter

B. They turn blue litmus red

C. They feel slippery

D. They react with soap

35. The pH range of acidic substances is:

A. 0 - 6

B. 7

C. 8 - 14

D. 1 - 14

36. What gas is produced when an acid reacts with a metal?

A. Oxygen B. Carbon dioxide

C. Hydrogen D. Nitrogen

37. Which of the following is a common use of acids?

A. Neutralizing bases

B. Softening metals

C. Preserving food

D. Producing soap

38. Which organ in the human body filters waste from the blood?

A. Heart B. Kidney

C. Stomach D. Liver

39. What is the main function of white blood cells?

A. Transport oxygen

B. Help in clotting

C. Fight infections

D. Remove waste

40. Menstruation is the:

A. Release of sperm

B. Monthly shedding of the uterus lining

C. Process of fertilization

D. Growth of the embryo

41. A doctor told Naserian that she had malaria. What is the main cause of malaria?

A. Mosquito bites

B. Eating contaminated food

C. Drinking dirty water

D. Poor hygiene

42. What type of energy is stored in food?

A. Light energy B. Chemical energy

C. Heat energy D. Sound energy

43. Which of the following is not a renewable energy source?

A. Solar B. Wind

C. Coal

D. Hydropower

44. What is the law of magnetism?

A. Like poles attract, unlike poles repel

B. Unlike poles attract, like poles repel

C. Magnets do not attract each other

D. Both poles repel

45. Which material is a good conductor of electricity?

A. Plastic B. Copper

C. Rubber D. Wood

SECTION B: (60 marks)

QUESTION 46 : (5 marks)

(a) Name three safety rules when handling chemicals. (3 marks)

i. _____

ii. _____

iii. _____

(b) State two reasons why it is important to handle glassware with care. (2 marks)

i. _____

ii. _____

iii. _____

QUESTION 47: (6 marks)

(a) Define the following terms:

i) Melting (1 mark)

_____

_____

ii) Condensation (1 mark)

_____

_____

(b) State two differences between a solid and a gas. (2 marks)

i. _____

ii. _____

(c) Give two examples of substances that undergo sublimation. (2 marks)

i. _____

ii. _____

QUESTION 48: ACIDS, BASES, AND NEUTRALIZATION (5 marks)

(a) Name two indicators used to test for acids and bases. (2 marks)

_____

_____

(b) What is the pH range of acids? (1 mark)

_____

(c) Give one use of acids and one use of bases in daily life. (2 marks)

_____

QUESTION 49 : ELEMENTS AND COMPOUNDS (6 marks)

(a) Define the following terms:

i) Element (1 mark)

_____

_____

ii) Compound (1 mark)

_____

_____

(b) Give two differences between elements and compounds. (2 marks)

_____

_____

(c) Name two examples of compounds. (2 marks)

_____

_____

QUESTION 50: OSMOSIS AND DIFFUSION (6 marks)

(a) Define the following:

i) Osmosis (2 marks)

_____

_____

ii) Diffusion (2 marks)

_____

_____

(b) Give one example of osmosis in plants. (1 mark)

_____

_____

(c) Give one example of diffusion in the human body. (1 mark)

_____

_____

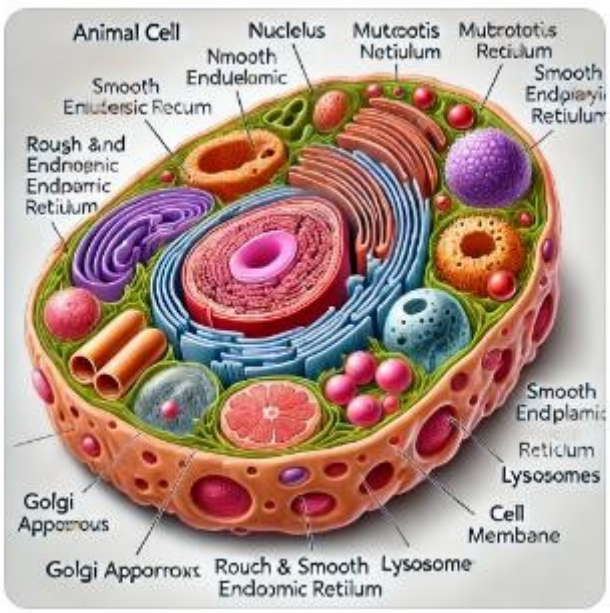
QUESTION 51: PLANT AND ANIMAL CELLS (7 marks)

(a) State two differences between plant and animal cells. (2 marks)

_____

_____

(b) Name the function of the following organelles:



i) Nucleus (1 mark)

_____

_____

ii) Cell membrane (1 mark)

_____

iii) Mitochondria (1 mark)

_____

iv) Vacuole (1 mark)

_____

(c) Why do plant cells have a cell wall while animal cells do not? (1 mark)

SERIES 6

PAPER 2

TASK 1: Laboratory Safety and Use of Apparatus (20 marks)

Perform the following laboratory activities carefully while observing safety precautions.

Activity 1: Heating a Substance Safely (10 marks)

Materials Provided:
a) Bunsen burner
b) Tripod stand
c) Wire gauze
d) Beaker with water
e) Matches

Procedure:

1. Set up the Bunsen burner correctly. (2 marks)
2. Light the Bunsen burner safely using a matchstick. (2 marks)
3. Adjust the air hole to create a blue flame. (2 marks)
4. Place the beaker with water on the wire gauze over the flame. (2 marks)
5. Observe and record the time taken for the water to start boiling. (2 marks)

Expected Observations:

- ✓ A blue flame is produced when the air hole is open.
- ✓ Water starts forming bubbles as it heats.

Activity 2: Using a Microscope to Observe a Prepared Specimen (10 marks)

Materials Provided:
a) Light microscope
b) Prepared specimen slide
c) Lens cleaning cloth

Procedure:

1. Identify and name three major parts of the microscope. (3 marks)

   _____

   _____

   _____

2. Place the specimen slide correctly on the stage. (2 marks)
3. Use the coarse and fine adjustment knobs to bring the specimen into focus. (3 marks)
4. Draw a simple diagram of the observed specimen. (2 marks)

Expected Observations:

The specimen appears clearer under higher magnification.

TASK 2: Separating a Mixture (10 marks)

You are provided with a mixture of sand and salt. Use the correct method to separate the two substances.

Procedure:

1. Pour the mixture into a beaker and add water. (2 marks)
2. Stir the mixture to dissolve the salt while the sand remains undissolved. (2 marks)
3. Filter the mixture using filter paper and a funnel. (2 marks)
4. Evaporate the filtrate to obtain salt crystals. (2 marks)
5. Write a conclusion based on your results. (2 marks)

Expected Observations:

Sand remains on the filter paper.

Salt forms crystals after evaporation.

SERIES 7

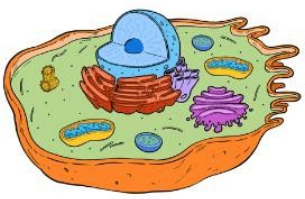
PAPER 1

Section A: Multiple Choice Questions (30 marks) (Choose the correct answer for each question.)

1. **What is Integrated Science?**
   A) Study of chemistry and physics only
   A) The combination of scientific disciplines to solve problems
   C) The study of living things only
   D) A branch of mathematics
2. **Which of the following is a laboratory safety rule?**
   A) Running in the laboratory
   B) Tasting chemicals to identify them
   C) Wearing protective gear when handling chemicals
   D) Leaving chemical spills unattended
3. **Which apparatus is used to measure mass?**
   A) Thermometer
   B) Spring balance
   C) Measuring cylinder
   D) Beaker
4. **What is the function of a Bunsen burner in the laboratory?**
   A) To measure liquid volume
   B) To heat substances
   C) To magnify objects
   D) To store chemicals
5. **Which of the following laboratory hazards is caused by electrical faults?**
   A) Acid spills B) Glass breakage
   C) Fire outbreaks D) Poisoning
6. **The best way to separate iron filings from sand is by:**
   A) Filtration B) Decantation
   C) Magnetism D) Distillation
7. **Which of the following is a pure substance?**
   A) Saltwater
   B) Air
   C) Gold
   D) Soda
8. **The universal indicator is used to:**
   A) Measure temperature
   B) Determine acidity or alkalinity
   C) Separate mixtures
   D) Detect gases

9. **Which one of these is a source of clean water?**
   A) Sewage water
   B) Rainwater
   C) Industrial waste
   D) Oil spills
10. **Which gas is produced when an acid reacts with a metal?**
   A) Oxygen B) Carbon dioxide
   C) Hydrogen D) Nitrogen
11. **Why do we use charcoal in a homemade water filter?**
   A) It absorbs impurities
   B) It dissolves dirt
   C) It increases pH
   D) It boils water
12. **What is menstruation?**
   A) The release of sperm
   B) The fertilization of an egg
   C) The monthly discharge of blood and tissue from the uterus
   D) The fusion of male and female cells
13. **Which part of the male reproductive system produces sperm?**
   A) Uterus
   B) Testes
   C) Ovary
   D) Fallopian tube
14. **What is the function of the kidney in the human body?**
   A) Digestion
   B) Circulation
   C) Excretion
   D) Respiration
15. **Which one of these is a source of electricity?**
   A) Bunsen burner B) Solar panels
   C) Water filter D) Microscope
16. **What happens when materials get charged?**
   A) They heat up
   B) They repel or attract
   C) They break down
   D) They change color
17. **What is the law of magnetism?**
   A) Unlike poles repel and like poles attract
   B) Like poles attract and unlike poles repel
   C) Both poles attract each other
   D) Magnets do not repel

18. **Which of the following is a conductor of electricity?**
    A) Plastic
    B) Rubber
    C) Copper
    D) Wood
19. **What is an electric appliance?**
    A) A device that generates wind
    B) A device that operates using electricity
    C) A machine used to separate mixtures
    D) A tool for chemical analysis
20. **Why should we avoid using water to put out an electrical fire?**
    A) It increases the fire
    B) It is ineffective
    C) Water is a conductor of electricity
    D) It produces toxic fumes
21. **What is the basic unit of all living things?**



    A) Organ
    B) Tissue
    C) Cell
    D) System

/ater across a membrane
    B) Movement of particles from high to low concentration
    C) Transport of oxygen by blood
    D) Exchange of gases in plants
23. **Which is a renewable source of energy?**
    A) Coal
    B) Wind
    C) Diesel
    D) Natural gas
24. **Which force makes objects fall to the ground?**
    A) Magnetic force
    B) Friction
    C) Gravity
    D) Elastic force
25. **What is the process of separating salt from seawater called?**
    A) Filtration
    B) Evaporation
    C) Sedimentation
    D) Decantation
26. **Which part of the microscope controls the amount of light passing through?**
    A) Stage

B) Condenser
C) Diaphragm
D) Objective lens

27. **What type of energy is stored in food?**
A) Light energy
B) Chemical energy
C) Heat energy
D) Sound energy

28. **The three states of matter are:**
A) Solid, liquid, gas
B) Atom, molecule, element
C) Heat, light, sound
D) Mass, weight, density

29. **Which gas do plants take in for photosynthesis?**
A) Oxygen
B) Carbon dioxide
C) Hydrogen
D) Nitrogen

30. **The boiling point of pure water at sea level is:**
A) 50°C
B) 75°C
C) 100°C
D) 150°C

SECTION B: STRUCTURED QUESTIONS (40 MARKS)

Answer all questions.

31. (a) Define the following: (4 marks)
i) Fertilization

_____
_____

ii) Excretion

_____
_____

iii) Static electricity

_____

_____

iv) Acid-Base Indicator

_____

_____

32.(a) Name three safety rules in a laboratory. (3 marks)

i. _____
ii. _____
iii. _____

(b) List three common laboratory accidents. (3 marks)

i. _____
ii. _____
iii. _____

33.(a) Explain the importance of separating mixtures. (2 marks)

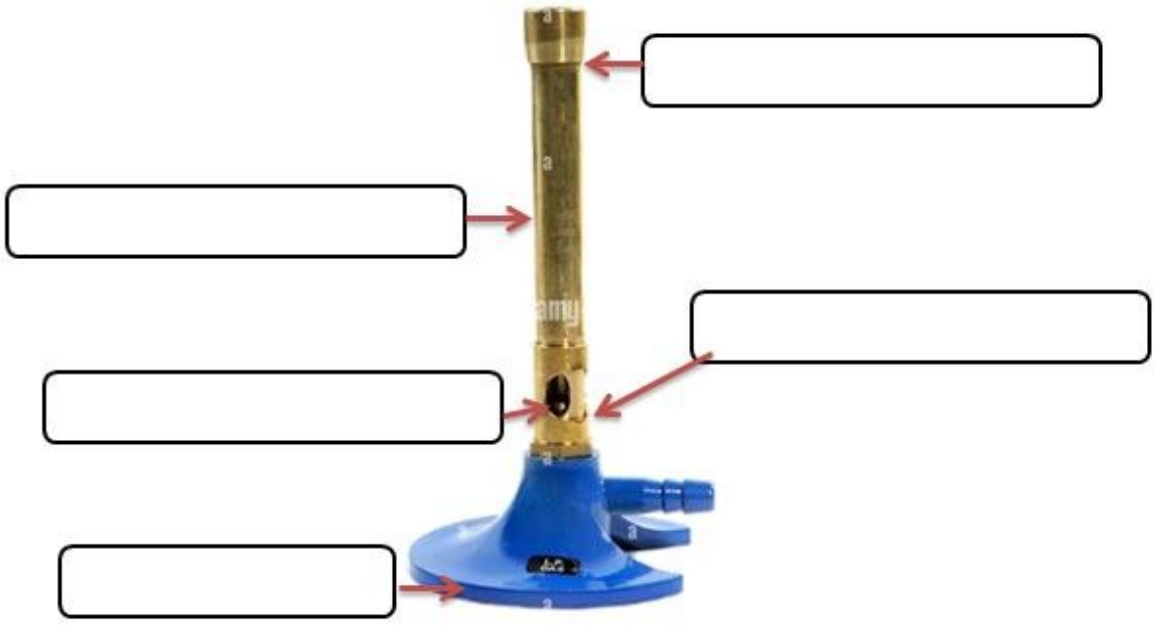
iv. _____
v. _____
vi. _____

34.

(b) Name two methods of separating mixtures and give an example for each. (4 marks)

vii. _____.
viii. _____.

35.(a) Label the parts of a Bunsen burner. (5 marks)



(b) Why is a wire gauze placed on top of a tripod stand when heating? (2 marks)

_____

_____

36. (a) Define osmosis. (2 marks)

_____

_____

(b) Differentiate between a physical and chemical change. (2 marks)

_____

_____

_____

_____

37. (a) Identify three renewable sources of energy. (3 marks)

ix. _____

x. _____

xi. _____

(b) How is electricity generated using wind? (3 marks)

_____
_____
_____

38. (a) List three main sources of water in the community. (3 marks)

xii. _____
xiii. _____
xiv. _____

(b) Explain how to purify dirty water for drinking. (3 marks)

_____
_____
_____
_____
_____

39. (a) Name two main reproductive organs in females and males responsible for production of sex cells. (2 marks)

Female organ	Male organ
	

(b) What challenges do girls face during menstruation? (3 marks)

xv. _____
xvi. _____
xvii. _____

40. (a) What is the importance of the kidney? (2 marks)

xviii. _____
xix. _____

(b) Name three ways of maintaining kidney health. (3 marks)

xx. _____
xxi. _____
xxii. _____

41. (a) Explain the role of friction in daily life. (3 marks)

xxiii. _____

xxiv. _____

xxv. _____

(b) Name two ways to reduce friction. (2 marks)

xxvi. _____

xxvii. _____

SERIES 7

PAPER 2

Task 1: Laboratory Safety and Use of Apparatus (20 marks)

Instructions:
Perform the following laboratory activities carefully while observing safety precautions.

Activity 1: Heating a Substance Safely (10 marks)

Materials Provided:

a) Bunsen burner
b) Tripod stand
c) Wire gauze
d) Beaker with water
e) Matches

Procedure:

1. Set up the Bunsen burner correctly. (2 marks)
2. Light the Bunsen burner safely using a matchstick. (2 marks)
3. Adjust the air hole to create a blue flame. (2 marks)
4. Place the beaker with water on the wire gauze over the flame. (2 marks)
5. Observe and record the time taken for the water to start boiling. (2 marks)

Expected Observations:

a) A blue flame is produced when the air hole is open.
b) Water starts forming bubbles as it heats.

Activity 2: Using a Microscope to Observe a Prepared Specimen (10 marks)

Materials Provided:

a) Light microscope
b) Prepared specimen slide
c) Lens cleaning cloth

Procedure:

1. Identify and name three major parts of the microscope. (3 marks)
2. Place the specimen slide correctly on the stage. (2 marks)
3. Use the coarse and fine adjustment knobs to bring the specimen into focus. (3 marks)
4. Draw a simple diagram of the observed specimen. (2 marks)

Expected Observations:

a) The specimen appears clearer under higher magnification.

Task 2: Separating a Mixture (10 marks)

Instructions:
You are provided with a mixture of sand and salt. Use the correct method to separate the two substances.

Procedure:

1. Pour the mixture into a beaker and add water. (2 marks)
2. Stir the mixture to dissolve the salt while the sand remains undissolved. (2 marks)
3. Filter the mixture using filter paper and a funnel. (2 marks)
4. Evaporate the filtrate to obtain salt crystals. (2 marks)
5. Write a conclusion based on your results. (2 marks)

Expected Observations:

a) Sand remains on the filter paper.
b) Salt forms crystals after evaporation.

SERIES 8

PAPER 2

TASK 1: Measuring the Volume of an Irregular Object (20 Marks)

You have been provided with the following materials

a) Measuring cylinder

b) Water

c) Small irregular object (e.g., stone or metal bolt)

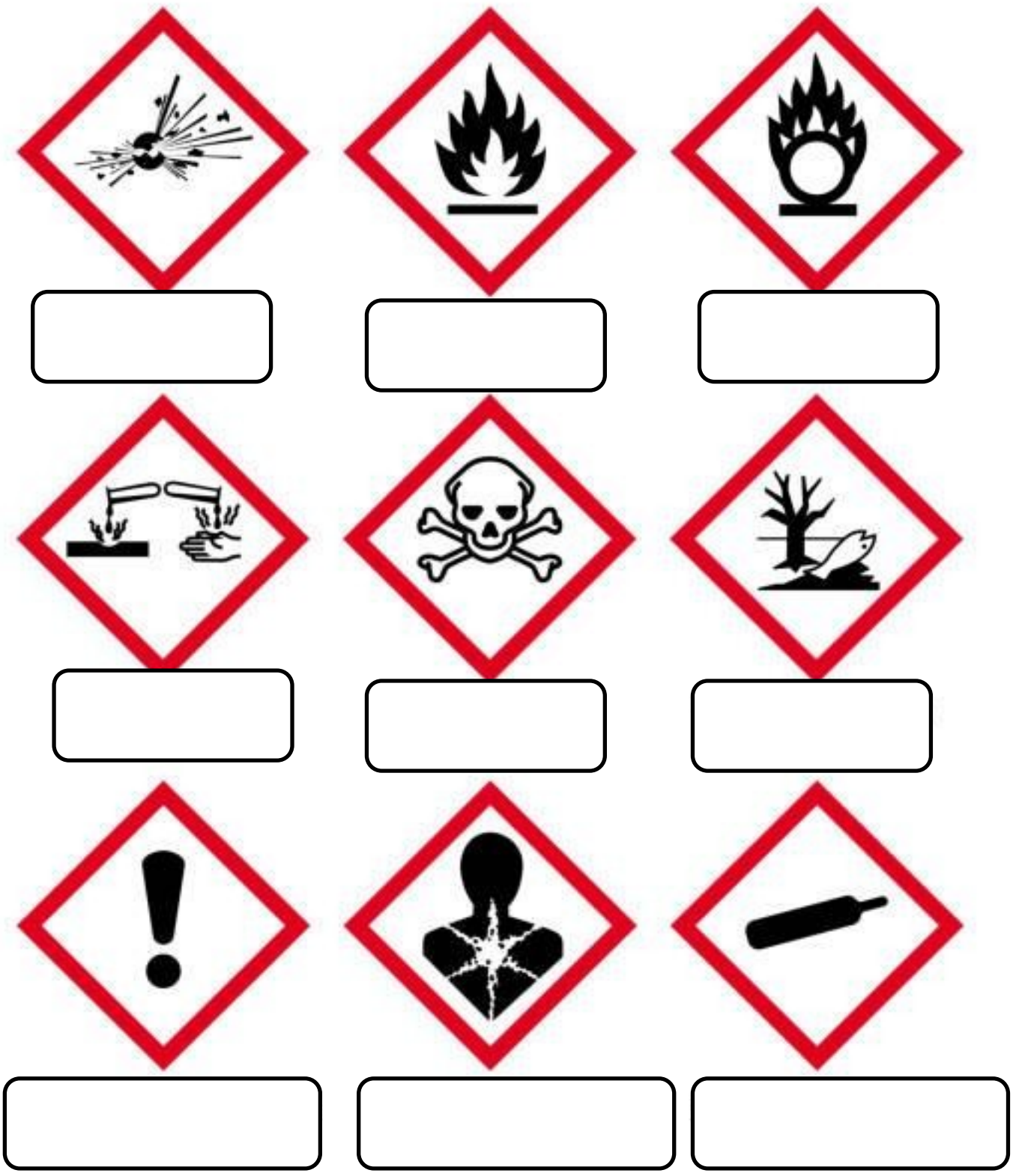
Instructions:

1. Fill a measuring cylinder with water and record the initial water level (V_1).
2. Gently place the irregular object into the water.
3. Record the new water level (V_2).
4. Calculate the volume of the object using the formula:
5. Record your answer in cm^3.

TASK 2: Identifying Hazard Symbols and Their Meanings (10 Marks)

Instructions:

1. Observe the different hazard symbols provided.



SERIES 8
PAPER 1
SECTION A

1. Mary was heating some liquid in the laboratory using a Bunsen burner. Suddenly, the flame turned yellow and became smoky. What could be the possible reason?

A. She closed the air hole completely.
B. She increased the gas supply.
C. She used a small flame.
D. She turned off the gas tap.

2. A farmer wants to store harvested grains for a long time without being attacked by pests. What should the farmer do first?

A. Dry the grains properly before storage.
B. Store the grains in an open place.
C. Spray the grains with water.
D. Mix the grains with wet soil.

3. Peter accidentally spilled an unknown chemical on his skin while working in the laboratory. What should he do first?

A. Rub the area with a cloth.
B. Wash the affected area with plenty of running water.
C. Ignore it if there is no pain.
D. Smell the chemical to identify it.

4. Which of the following is the most appropriate way to handle broken glass in the laboratory?

A. Pick it up with bare hands and throw it in the bin.
B. Use a dustpan and brush to collect the pieces.
C. Ask a friend to pick it up.
D. Leave it on the floor for the cleaner.

5. A shopkeeper wants to determine the density of a cooking oil sample. Which two measurements must he take?

A. Mass and volume
B. Temperature and weight
C. Volume and area
D. Height and length

6. Which of the following statements is true about a thermometer?

A. It measures the weight of an object.
B. It measures the temperature of a substance.
C. It is used to measure liquid volumes.
D. It is used to separate solid particles from liquids.

7. Jane observed that an object floated on water but sank in oil. What can be concluded about the object?

A. It is denser than both water and oil.
B. It is less dense than water but denser than oil.
C. It is less dense than oil but denser than water.
D. It has the same density as both water and oil.

8. What should be done when lighting a Bunsen burner?

A. Keep the air hole fully open before lighting.
B. Light the matchstick first before turning on the gas.
C. Turn on the gas first before lighting the matchstick.
D. Use a candle to light the burner.

9. A farmer noticed that some of his crops had stunted growth despite watering them regularly. What could be the possible cause?

A. The soil lacks essential nutrients.
B. The crops are receiving too much water.
C. The crops are getting too much sunlight.
D. The soil has too many earthworms.

10. Which of the following is NOT a source of energy?

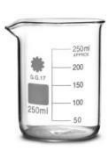
A

B

C

D

11. A laboratory technician wants to measure 20 ml of a liquid accurately. Which apparatus should she use?



A

B

C D

A. A beaker
B. A burette
C. A measuring cylinder
D. A conical flask

12. A Grade 7 student mixed iron filings with sand. Which method can best be used to separate them?

A. Sieving
B. Filtration
C. Using a magnet
D. Decantation

13. If a liquid has a strong smell and evaporates quickly, what is the best way to handle it?

A. Work in a closed room.
B. Keep it near a flame.
C. Work in a well-ventilated area.
D. Store it in an open container.

14. Which of the following pairs consists of only physical changes?

A. Melting ice and cutting paper
B. Burning wood and rusting iron
C. Digesting food and cooking an egg
D. Baking a cake and boiling water

15. What is the main reason why cooking oil does not mix with water?

A. Oil is heavier than water.
B. Oil is lighter than water.
C. Oil and water have different densities.
D. Oil and water do not chemically react.

16. A scientist wants to measure the mass of a stone. Which instrument should she use?

A. Thermometer
B. Spring balance
C. Measuring cylinder
D. Stopwatch

17. A metal spoon is left in hot soup for a few minutes. The handle becomes hot. What type of heat transfer has occurred?

A. Radiation B. Conduction
C. Convection D. Insulation

18. Why is it important to close the gas tap immediately after using a Bunsen burner?

A. To prevent the burner from cooling too fast.
B. To save gas and prevent leaks.
C. To avoid wasting oxygen.
D. To stop the experiment from continuing.

19. A scientist places a balloon in a freezer and observes that it shrinks. What causes this change?

A. The balloon loses air.
B. The air inside contracts when cooled.
C. The balloon material hardens.
D. The air inside evaporates.

20. Which of the following is the best method to separate salt from a saltwater solution?

A. Filtration
B. Sieving
C. Evaporation
D. Decantation

SECTION B

Read all the instructions carefully

1. Integrated science comprises of the five basic sciences, Name them (5mks)

_____
_____
_____
_____
_____

2. Giving examples, state any four fields that have benefits from integrated science. **(4mks)**

_____
_____
_____
_____

3. State the meaning of the following hazard symbols. **(3mks)**



4. State four common accidents in the laboratory. **(4mks)**

_____

_____

_____

_____

5. Differentiate between burns and scalds. **(2mks)**

_____

_____

_____

6. Name four tools found in the first aid kit. **(4mks)**

_____

_____

_____

_____

7. Name four basic quantities. (4mks)

_____

_____

7. Grade 7 learners were asked by their teacher to measure and determine the volume of a certain colourless liquid in the laboratory.

a.) Identify two safety measures the leaners should observe when handling the colourless liquid. **(2mks)**

_____

_____

b.) Give two basic scientific skills the learners must have used. **(2mks)**

_____

_____

c.) Give any five-laboratory apparatus the learners used in measuring the liquid. **(5mks)**

_____

_____

_____

_____

_____

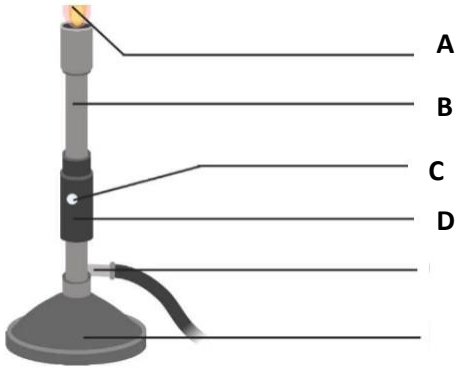
8. The following are derived quantities. Identify their SI unites.

a.) Density _____

b.) Volume _____

c.) Area _____**(3mks)**

9. The picture below shows an apparatus used in the laboratory. Use it to answer the questions that follow.



i. Identify the apparatus in the picture above. _____ **(1mk)**

ii. State the use of the apparatus in the laboratory. **(1mk)**

_____

_

iii. Name the parts of the apparatus labelled A, B, C and D. **(4mks)**

A _____

B _____

C _____

D _____

iv. Name any other two apparatus used in the same way as the one above. **(2mks)**

_____ _____

v. Give two safety measures to observe when using the apparatus above. **(2mks)**

_____

_____

10. A block has a mass 550 kg. If its length is 5m, width 2m and height 1m. Calculate the density of the block. (3mks)

11. Grade 7 leaners visited the school laboratory to observe some specimens they collected. Name two likely apparatus they used in the process. **(2mks)**

_____

_____

12.

a.) Give four types of details usually found on packaging labels. (4mks)

_____

_____

_____

_____

b.) What is the importance of having packaging labels on items. (2mks)

13. What does SI unit stand for? (1mk)

SERIES 9

PAPER 1

SECTION A: (40 Marks)

1. A learner is carrying out an experiment to test for acidity in lemon juice. Which of the following would be the most appropriate to use?
   A. Water
   B. Litmus paper
   C. Salt
   D. Sand
2. Which of the following statements best explains why water is considered a universal solvent?
   A. It is found in large amounts on Earth
   B. It dissolves many substances
   C. It is used in cooling engines
   D. It is used in farming
3. A farmer wants to protect his crops from pests and diseases. Which branch of science is most useful in solving this problem?
   A. Physics
   B. Biology
   C. Chemistry
   D. Mathematics
4. A scientist observes that when a metal rod is placed in hot water, it becomes warm. What type of heat transfer is this?
   A. Convection
   B. Conduction
   C. Radiation
   D. Reflection
5. Which of the following is the safest method to separate sand from salt solution?
   A. Filtration
   B. Distillation
   C. Evaporation
   D. Magnetism
6. A nurse uses a thermometer to check a patient's body temperature. What is the SI unit for measuring temperature?
   A. Gram
   B. Kelvin

C. Meter

D. Ampere

7. Which of the following best describes a physical change?
   A. Burning of wood
   B. Rusting of iron
   C. Melting of ice
   D. Cooking of food
8. A substance reacts with an acid and produces salt and water. What type of substance is it?
   A. Metal
   B. Acid
   C. Base
   D. Indicator
9. Why should flammable substances be stored away from open flames in the laboratory?
   A. They may react with glass
   B. They produce harmful gases
   C. They can easily catch fire
   D. They are used to heat substances
10. What is the function of a test tube in a laboratory?
    A. Measuring liquids
    B. Mixing small amounts of substances
    C. Heating large amounts of substances
    D. Weighing chemicals

SECTION B: (60 Marks)

11. Jane and her classmates were conducting an experiment when she accidentally spilled a chemical on the table.

a) What should Jane do immediately after the spill? (2 marks)

_____

_____

b) List two general laboratory safety rules to prevent accidents. (2 marks)

_____

_____

c) Why is it important to wear a lab coat while working in a laboratory? (2 marks)

_____

_____

12. A learner wants to test whether three different household substances (vinegar, soap, and baking soda solution) are acidic or basic.

a) Which tool should the learner use to test the acidity or basicity of the substances? (1 mark)

_____

b) If vinegar turns litmus paper red, what does this indicate? (2 marks)

_____

c) Explain why soap feels slippery when touched. (3 marks)

13. David accidentally mixed iron filings with sand.

a) Which separation method should he use to remove the iron filings? (2 marks)

_____

b) Explain how the chosen method works. (2 marks)

_____

_____

c) Name one other method that can be used to separate a solid from a liquid. (2 marks)

_____

14. During a cold morning, Amina wraps herself in a thick blanket.

a) Which type of heat transfer is prevented by the blanket? (2 marks)

_____

b) Name two good conductors of heat. (3 marks)

15. (7 marks) Laboratory Apparatus and Their Uses

Match the following apparatus with their correct use:

Apparatus	Use
Beaker	(a) Measures precise volumes of liquid
Bunsen burner	(b) Heats substances
Thermometer	(c) Measures temperature
Filter paper	(d) Separates insoluble substances from liquids
Graduated cylinder	(e) Holds and mixes liquids

SERIES 9

PAPER 2

TASK 1: SEPARATION OF MIXTURES (20 Marks)

1. Materials and Setup (3 Marks)

You are provided with:

a) A mixture of iron filings and sulfur powder
b) Magnet
c) Beaker
d) Water
e) Filter paper
f) Evaporating dish
g) Bunsen burner
h) Tripod stand and wire gauze

Procedure:

1. Separation using a magnet – Pass a magnet over the mixture and observe.
2. Dissolving sulfur in water – Add water to the remaining sulfur and stir.
3. Filtration – Filter the mixture and observe the residue.
4. Evaporation – Heat the filtrate in an evaporating dish.

2. Observations (4 Marks)

a) What happened when the magnet was passed over the mixture?

_____

b) What remained on the filter paper after filtration?

_____

c) What was left in the evaporating dish after heating?

_____

3. Explanation (4 Marks)

a) Why was the magnet able to separate iron filings from sulfur?

_____

_____

b) Why did filtration separate sulfur from the water?

_____

_____

c) Why did evaporation leave solid sulfur behind?

_____

_____

4. Conclusion (3 Marks)

a) What do these separation techniques demonstrate?

_____

_____

b) Give one real-life application of filtration and evaporation.

_____

_____

5. Other Separation Methods (3 Marks)

Fill in the table:

Method	Example of Use
Decantation	_____
Distillation	_____-_____
Sieving	_____

TASK 2: LABORATORY APPARATUS (10 Marks)

1. Identifying Laboratory Apparatus (4 Marks)

Match the following apparatus with their correct uses:

Apparatus	Use
Beaker	Heating substances
Test tube	Measuring and mixing liquids
Funnel	Holding small amounts of liquid for experiments
Bunsen burner	Used in filtration and pouring liquids

2. Safety Rules in the Laboratory (3 Marks)

State three safety rules followed in the laboratory during the practical.

_____

_____

_____

_____

3. Conclusion (3 Marks)

a) Why is it important to handle laboratory apparatus correctly?

_____

_____

b) What could happen if safety rules are not followed?

_____

_____

SERIES 10

PAPER 1

Section A: Multiple Choice Questions (20 Marks)

1. Which of the following is a non-renewable source of energy?
   A) Wind
   B) Solar
   C) Coal
   D) Biomass
2. What is the main gas released during photosynthesis?
   A) Carbon dioxide
   B) Oxygen
   C) Nitrogen
   D) Methane
3. Which of the following best describes osmosis?
   A) Movement of water from a region of low concentration to high concentration.
   B) Movement of water from a region of high concentration to low concentration through a semi-permeable membrane.
   C) Movement of solutes from a region of high concentration to low concentration.
   D) Movement of gases through a semi-permeable membrane.
4. The smallest unit of an element that retains its chemical properties is:
   A) A molecule
   B) A compound
   C) An atom
   D) An ion
5. Which process leads to the formation of clouds?
   A) Evaporation
   B) Condensation
   C) Precipitation
   D) Runoff
6. What is the main function of white blood cells in the human body?
   A) Transporting oxygen
   B) Fighting infections
   C) Clotting blood
   D) Transporting nutrients
7. Which simple machine is used to lift heavy objects with less effort?
   A) Pulley
   B) Inclined plane
   C) Lever
   D) Screw
8. The boiling point of water at sea level is:
   A) 100°C
   B) 80°C
   C) 120°C
   D) 90°C
9. What is the chemical symbol for sodium?
   A) S
   B) So

C) Na
D) N

10. Which part of the plant is responsible for absorbing water and nutrients?
    A) Stem
    B) Roots
    C) Leaves
    D) Flower

Section B: Structured Questions (60 Marks)

1. Introduction to integrated science

a. What is the scientific method?

_____
_____

b. List the steps involved in conducting a scientific investigation.(5 marks)

_____
_____

2. Measurement and Scientific Units

a. List the basic SI (International System of Units) units for the following quantities: (5 marks)

i. Length_____.
ii. Mass._____.
iii. Time_____.
iv. Temperature_____.
v. Volume_____.

- **b.** Convert the following units: (3 marks)
    I. 5 meters to centimeters

    II. 2.5 kilograms to grams

    III. 3.2 liters to milliliters

- **c.** A student measures the mass of a sample and obtains a value of 45.6 grams. What is the precision of this measurement if the instrument has an uncertainty of ±0.1 g? (2 marks)

3. Matter and Its Properties

- **a.** Define matter and explain the three states of matter (solid, liquid, gas) with examples. (2 marks)

  _____

- **b.** Differentiate between physical and chemical properties of matter with examples. (2 marks)

  _____

- **c.** What is the difference between a physical change and a chemical change? Give one example of each. (2 marks)

  _____

4. Structure of the Atom

a. Draw and label the structure of an atom, including the position of protons, neutrons, and electrons. (2 marks)

b. Define an isotope and provide an example of an isotope of carbon. (2 marks)

_____
_____

c. What is the atomic number and atomic mass of an element? How are they related? (2 marks)

_____
_____

5. The Periodic Table

a. Explain the organization of elements in the periodic table. What information can be obtained from an element's position in the table? (2 marks)

_____
_____

b. What are periods and groups on the periodic table? How are elements in the same group similar? (2 marks)

_____
_____

c. Describe the properties of metals, non-metals, and metalloids. Provide one example of each. (2 marks)

SERIES 10

PAPER 2

Questions

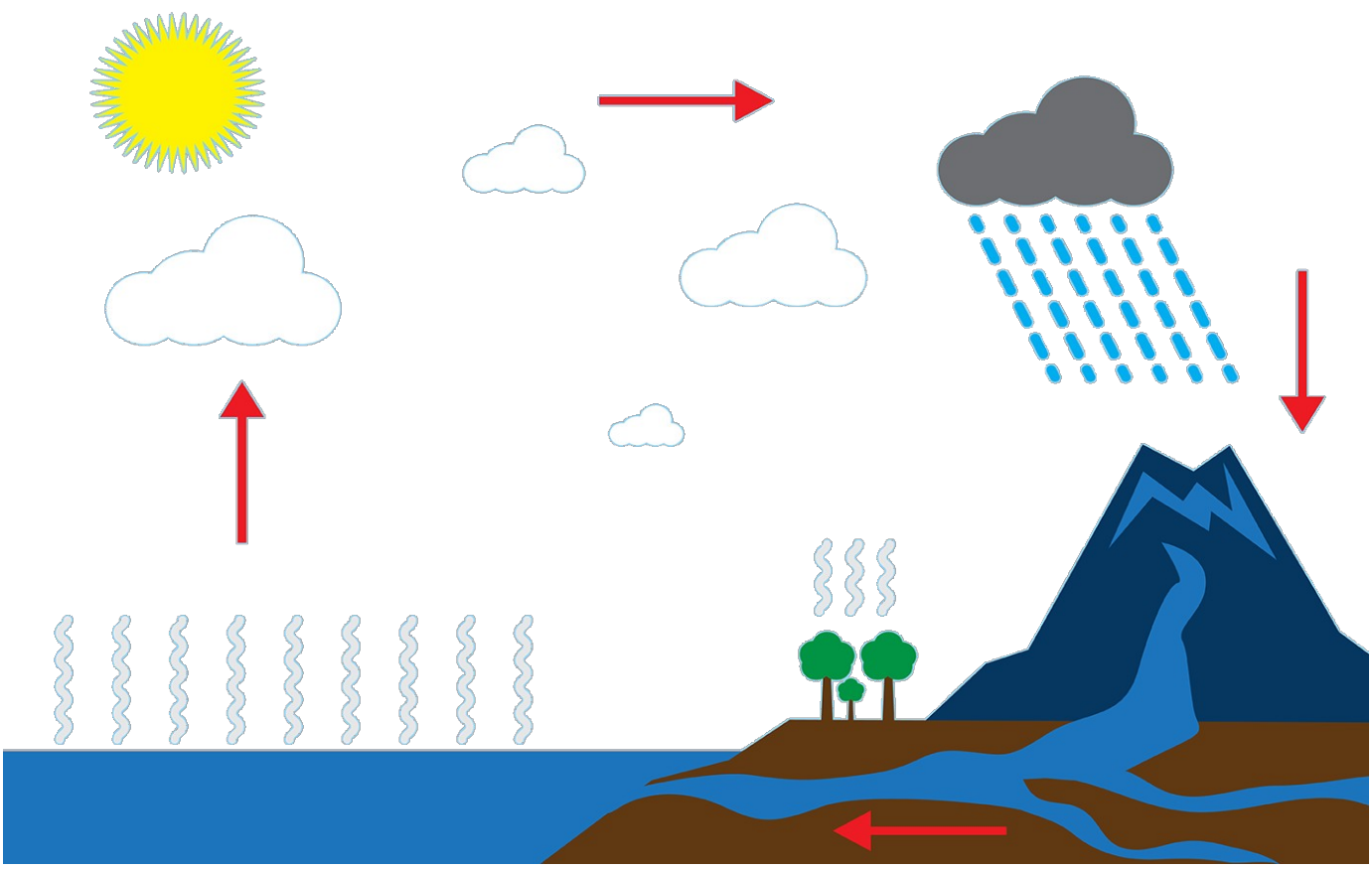
1. **Experiment: Separating a Mixture of Sand and Salt** (20 Marks)
   Describe the procedure you would follow to separate a mixture of sand and salt. Include materials and steps.

   _____

2. The diagram below shows the water cycle representing various physical changes.

Label the following processes: (4 Marks)

- Evaporation
- Condensation
- Precipitation
- Runoff



3. The teacher has provided you with a tomato plants that appears to have stunted growth and yellowing leaves. Using science knowledge:-
   a) Identify two possible causes of the problem. (2 Marks)

_____

_____

b) Suggest two solutions to address the problem. (2 Marks)

_____

_____

4. **Simple Machines** (10 Marks)
   a) Draw and label a diagram of a lever. (5 Marks)

   b) State two advantages of using simple machines in daily life. (2 Marks)

   _____

   _____

   c) Give three example of a simple machine used at home. (3 Mark)

   _____

   _____

   _____

5. Test and classify the following specimens provided into acids, neutral or bases: (6 Marks)

Specimen	Base	Neutral	Acid
a) solution A			
b) Solution B			
c) Solution C			

SERIES 11

PAPER 1

QUESTIONS

1. Which of the following is an example of a physical change?
    - A) Burning wood
    - B) Dissolving sugar in water
    - C) Rusting of iron
    - D) Cooking an egg
2. Which of the following forms of energy is associated with the movement of objects?
    - A) Thermal energy
    - B) Kinetic energy
    - C) Electrical energy
    - D) Chemical energy
3. Which of the following is a characteristic of living organisms?
    - A) They grow and develop
    - B) They cannot reproduce
    - C) They do not need energy
    - D) They do not respond to their environment
4. What is the main function of the human circulatory system?
    - A) To digest food
    - B) To pump blood around the body
    - C) To remove waste from the body
    - D) To provide oxygen to cells
5. Which of the following is a chemical change?
    - A) Melting of ice
    - B) Burning of paper
    - C) Dissolving salt in water
    - D) Freezing of water

6. Which of the following is NOT a function of the human respiratory system?
    - A) To provide oxygen to the blood
    - B) To expel carbon dioxide from the body

    - C) To regulate body temperature
    - D) To prevent pathogens from entering the lung
7. Which of the following elements is most commonly found in organic compounds?
    - A) Nitrogen
    - B) Oxygen
    - C) Carbon
    - D) Hydrogen
8. Which of the following is a primary source of energy for plants during photosynthesis?
    - A) Water
    - B) Soil nutrients
    - C) Sunlight
    - D) Oxygen
9. What type of energy is stored in the food we eat?
    - A) Kinetic energy
    - B) Potential energy
    - C) Chemical energy

D) Thermal energy
SECTION B

Question 1:

a) Define energy transformation. (2 marks)

b) A person uses a bicycle to climb a hill. What energy transformations occur during this process? (4 marks)

Question 2:

a) List any two enzymes involved in digestion. (2 marks)

b) Explain the role of bile in digestion. (3 marks)

Question 3:

a) Define the term "force." (2 marks)

b) A car which weighs 2000kg lies on an area of $10m^2$ with the tarmac. What pressure does it apply on the tarmac? (3 marks)

Question 4:

a) State the law of reflection. (2 marks)

b) A light ray strikes a mirror at an angle of 30° . What is the angle of reflection? (2 marks)

Question 5:

a) Identify the part of the digestive system where the absorption of nutrients mainly occurs. (1 mark)

b) What role do the villi in the small intestine play? (3 marks)

Question 8 :

Atoms and the Periodic Table

a. Define an atom and state the three subatomic particles, their charges, and locations in the atom.

b. The element Sodium (Na) has an atomic number of 11 and a mass number of 23.

i. Determine the number of protons, neutrons, and electrons in a sodium atom.

ii. Write the electronic configuration of sodium.

Question 9

a. State two properties of elements in Group 1 (alkali metals) of the periodic table.

b. Explain why elements in the same group have similar chemical properties.

Question 10:

a. Give three physical properties and three chemical properties of metals.

b. Iron (Fe) reacts with oxygen and water to form rust. Write the word equation

for this reaction.

c. List two methods used to prevent rusting in metals.

SERIES 11

PAPER 2

1. Experiment 1: Determination of the pH of Various Solutions

   - ✓ Objective: To determine the pH of different substances (e.g., water, vinegar, lemon juice, soap solution).
   - ✓ Materials: pH paper, test tubes, pipettes, various solutions.
   - ✓ Procedure:

     i. Use a pipette to place each solution in a test tube
     ii. Dip a piece of pH paper into each.
     iii. Record the color change
     iv. Determine the pH value by comparing it to the pH scale.

   Questions:

   a. What is the pH of lemon juice and soap solution?

_____
_____

   b. What is the significance of pH in daily life?

_____
_____

2. Experiment 2: Investigating the Rate of Reaction

   - ✓ Objective: To investigate the effect of concentration on the rate of a chemical reaction.
   - ✓ Materials: Hydrochloric acid, sodium thiosulfate, conical flasks, stopwatch.
   - ✓ Procedure:

     i. Mix hydrochloric acid with sodium thiosulfate
     ii. Observe the reaction.
     iii. Record the time taken for the solution to become cloudy at different concentrations.

Questions:

a. How does concentration affect the rate of the reaction?

_____

_____

b. What factors influence the rate of reaction?

_____

_____

3. Experiment 3: Investigating the Effect of Light on Photosynthesis

- ✓ Objective: To investigate the effect of light on the rate of photosynthesis in a plant.
- ✓ Materials: Beaker, water, a leafy plant (e.g., Elodea), light source.
- ✓ Procedure:

i. Place the plant in water,
ii. Expose it to different light intensities,
iii. Observe the oxygen bubbles produced.

Questions:

a. How does the light intensity affect photosynthesis?

_____

_____

b. What is the importance of photosynthesis to life on Earth?

_____

_____

4. Experiment 4: Determining the Density of Solids and Liquids

- ✓ Objective: To determine the density of a solid and a liquid.
- ✓ Materials: Solid object (e.g., metal), balance, measuring cylinder.

- ✓ Procedure:

    i. Measure the mass of the solid and the volume of the liquid,
    ii. Calculate the density (density = mass/volume).

    Questions:

    a. What is the formula for calculating density?

_____

_____

    b. How does the density of an object determine whether it floats or sinks in a liquid?

_____

_____

5. Experiment 5: Measuring the Effect of Temperature on the Solubility of a Substance

- ✓ Objective: To investigate how temperature affects the solubility of salt in water.
- ✓ Materials: Salt, water, beaker, thermometer, stirring rod.
- ✓ Procedure:

    i. Heat water to different temperatures
    ii. Add salt, recording the amount dissolved at each temperature.

    Questions:

    a. How does temperature affect the solubility of salt?

_____

_____

    b. What are some applications of solubility in everyday life?

SERIES 12
PAPER 1
SECTION A: (30 MARKS)
ANSWER ALL QUESTIONS

1. The kidney is a very important part of the excretory system, its main function is to filter blood and remove waste materials. Urine is the main waste material excreted by the kidney. Which one of the following is not a component of urine?

    a. Urea
    b. Salts
    c. Sweats
    d. Excess water

2. While cleaning the laboratory, a Grade 7 learner came across the apparatus below. What is the name of the apparatus the learner saw?

    A. Delivery tube
    B. Conical flask
    C. Beaker
    D. Round bottomed flask

3. Every element has its own unique symbol which is used for identification. Identify the element which has been correctly matched with its symbol.

    A. Sodium - Na
    B. Sulphur - Si
    C. Silicon - S
    D. Potassium - Po

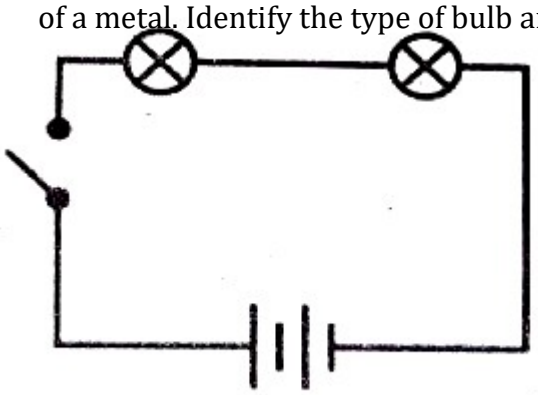
4. Study the table below and identify the physical changes in adolescents that has been correctly matched with the gender

	Changes in adolescents	Occurs in
A.	Hips broadening	Boys
B.	Voice becomes softer	Girls
C.	Menstruation begins	Boys
D.	Experiences wet dreams	Girls

A. Hips broadening - Boys
B. Voice becomes softer - Girls
C. Mensturations begins - Boys
D. Experience wet dreams - Girls

5. As one prepares to observe a specimen using a microscope, it is important to first prepare the specimen. What is the importance of staining the specimen?
   A. To make the specimen more beautiful
   B. To increase turgidity
   C. To prevent disorting cells
   D. To increase visibility

6. During a practical lesson, a Grade 8 learner used the simple circuit below to test the conductivity of a metal. Identify the type of bulb arrangement in the circuit she used?



Circuit A

   A. Parallel arrangement of cells
   B. Series arrangement of bulbs
   C. Series arrangement of cells
   D. Parallel arrangement of bulbs

7. When walking around the school, a Grade 8 learner came across the symbol below on a fire extinguisher. Which class of fire is the extinguisher used for?

   A. Class A
   B. Class D
   C. Class B
   D. Class C

8. When learning about components of Integrated Science. Peter listed down the components of Integrated Science. Which one of the following is not expected to be in the list?
   A. Agriculture

B. Biology
C. Physics
D. Chemistry

9. Energy transformation may lead to dangers. Identify the danger that may cause loss of hearing and can be mitigated by use of earmuffs?
   A. Bright light
   B. Collisions
   C. Road accidents
   D. Loud noise
10. An atom of an element has an electron arrangement of 2.8.2. What is the name given to the element?
   A. Barium
   B. Aluminum
   C. Magnesium
   D. Silicon
11. The picture below shows a source of electricity commonly found in most homes. What is the name given to the power source below?

D. Geothermal power

12. Study the table shown below and use it to identify which separation method has been correctly matched with the type of mixture it separates

	Method of separation	Type of mixture
A.	Fractional distillation	Water and salt
B.	Paper chromatography	Dye from coloured flowers
C.	Filtration	Oil and water
D.	Use of a magnet.	Maize and wheat flour.

13. Carbon is an element found in the periodic table. It has 6 protons and 6 electrons. What is the mass number of carbon?

A. 0
B. 36
C. 12
D. 1

14. Rael, a Grade 8 learner, wrote down the arrangements of the components of a fire triangle. Which one is the correct arrangements?

A. Hydrogen, fire and light
B. Oxygen, fuel and carbon (iv) oxide
C. Oxygen, hydrogen and heat
D. Oxygen, fuel and heat

15. After use, a microscope has to be covered before being stored in an appropriate place. What is the significance of covering a microscope?

A. To prevent ot from getting dust
B. To prevent moisture
C. To avoid falling down
D. To keep it away from pests and rodents

16. Measurements in science are standardized f them to be useful. We have basic and derive quantities. Which one of the following is not example of a derived quantity?

A. Area
B. Density
C. Temperature
D. Pressure

17. Which part of the female reproductive syste is responsible for nourishing and developing foetus?

A. Uterus
B. Fallopian tube
C. Vagina
D. Ovaries

18. The cell membrane is responsible for selectively | 23. A television undergoes energy transformation allowing substances in and out of the cell. Which one of the following is not a property of the membrane?

A. It is semi permeable
B. It is sensitive to changes in pH and temperature
C. It is polarised
D. It is affected by surface area to volume ratio

19. Electric motors and generators have magnets that help in their functioning. Apart from the two, identify another electronic device that uses magnets for their functioning

A. Washing machine
B. Iron sheets
C. Electrical cables
D. Bulbs

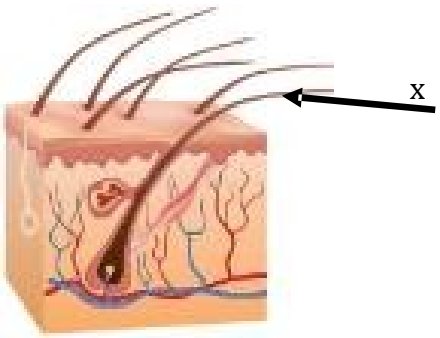
20. Osmosis is very important in living organisms. Which one of the following is not an importance of osmosis to plants?

A. Support in plants
B. Opening and closing of the stomata
C. Osmoregulation
D. Feeding of insectivorous plants

21. Grade 8 learners were asked to name situations which demonstrate high pressure. Each one of them gave their answers. Who among the learners gave the correct answer?

A. Pauline - A wide flat tire
B. John - A Sharp knife cutting through paper
C. Jane - A wide paddle boat moving in water
D. Kelvin - A snow shoe ni soft snow

22. Study the diagram below and identify the part marked **X.**



A. Hair follicle
B. Sweat duct
C. Blood vessels
D. Hair

23. A television undergoes energy transformation in order to display pictures and produce sound. Identify the correct energy transformation taking place in a television that uses a battery.

A. Potential energy -kinetic energy.
B. Chemical energy-kinetic energy-electrical energy
C. Chemical energy -electrical energy-light and sound energy.
D. Potential energy -kinetic -sound energy

24. A Grade learner was asked to identify the part of the male reproductive system where sperms are produced. What was his ans ver?

A. Prostate gland
B. Testes
C. Urethra
D. Epididymis

25. During a visit to the laboratory. A learner came across the symbol below. What is the meaning of the symbol the learner saw?

A. Corrosive
B. Radioactive
C. Flammable
D. Carcinogenic

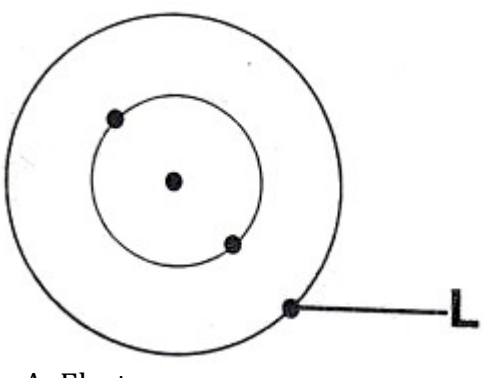
26. A certain state of matter has the following characteristics: It has no fixed shape since it takes the shape of the container and particles are far apart. Identify the state of matter

A. Liquids
B. Gases
C. Solids
D. Plastic

27. Identify the part of the microscope that is used to concentrate light reflected by the mirror on the specimen on the stage.

A. Diaphragm
B. Aperture
C. Fine adjustent knob
D. Condenser

28. What is the name given to the part labelled I in the diagram below?



A. Electrons
B. Protons
C. Energy levels
D. Electron configuration

29. Which one of the following is not likely to be attracted by a magnet if placed close to each other?

A. Aluminium
B. Iron
C. Glass
D. Coin

30. The tomatoes in the school farm were not doing so well even after adding manure and fertilisers to the soil. One of the learners believed the problem was the soil pH.What would you advise them to do?

A. Check the soil pH
B. Add more fertilisers
C. Use organic manure
D. Add more water and lime

SECTION 2

31.

a. During a career day at Utumishi School, Grade 8 learners were taught about careers related to Integrated Science. Name two careers they were likely to be told. (2mks)

i. _____-

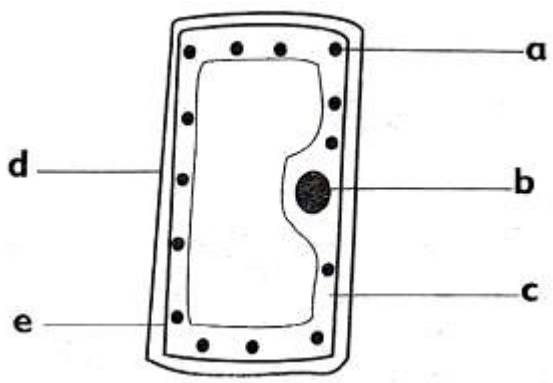
j. _____

b. A laboratory is a room that contain different types of equipment and apparatus. What are some of the rules we should follow while in the laboratory?

i. _____

j. _____

c. Grade 9 learners observed the following image in a light microscope. Use the image below to answer the questions that follow. (2 mks)



i. Identify the part marked d

_____

ii. What is the function of the part marked a?

_____

32. Fill the table below using the appropriate answers. (3 mks)

Common laboratory accident	Causes of accident
Burns.	
Electric shock.	
Falls.	

33. Identify the scientific skills that are being explained in the situations below. (2 mks)

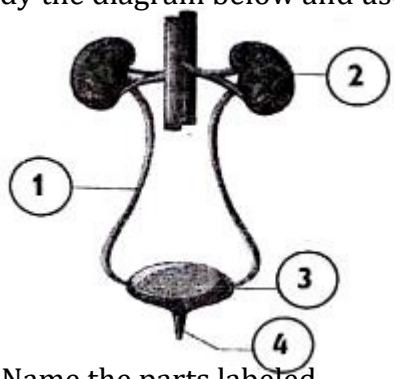
a) A Grade 7 learner took measurements of the length and width of his class and calculated the area of the class.

_____-

b) Agriculture learners realised that their crops are wilting and watered them immediately.

_____

34. Study the diagram below and use it to answer the questions that follow.



a. Name the parts labeled

1._____.
2. _____.

b. Identify the disorder that causes hard deposits of minerals and salt in the kidney (1mrk)
_____.

c. How can one take care of their kidneys to ensure they do not get kidney disorders? (1mk)

_____.

35. When learning about the human skin, learners learnt about epidermis. What is its function? (1mk)

_____
_____

36. a. The female reproductive system has quite a lot of functions. Identify two functions of the female reproduction systems. (2mks)

_____

_____

b. What are some of the challenges associated with the menstruation cycle? (2mks)
_____
_____

37. Grade 8 learners carried out an experiment to investigate one of the physiological processes in living organisms. Study the pictures of the set up they made and use it to answer the questions that follow.

a. Identify the physiological processes being investigated. (1mk)

_____

b. What are some of the factors that affect the physiological process above? (2mks)

_____

_____

38. a. Help Tanya a Grade 7 learner to define the following terms:

i. Conductor

_____

_____

ii. Non-conductor

_____

_____

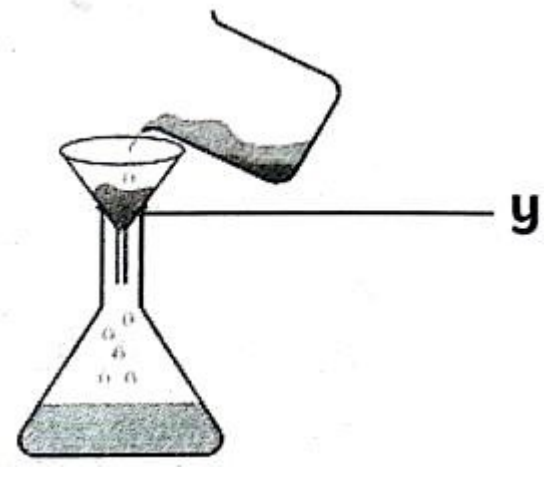
b. What are some of the safety measures one should consider when handling an electrical application?

_____

_____

_____

39. Use the image below to answer the questions that follow.



a. Name the process above (1 mk)

_____

b. Identify the solid y. (1 mk)

_____

40. a) Define the term atom. (1mk)

_____

_____

b) Calculate the atomic number of an element A whose mass number is 16 and the number of neutrons is 10. (1mk)

_____

41. A Grade 8 learner came across the following diagram that shows the arrangement of particles in a substance. Use it to answer the questions that follow.

a) Identify the physiological processes being investigated. (1mk)

_____

b) What are some of the factors that affect the physiological process above? (2mks)

_____

_____

_____

42. A matatu driver slowed down the car to allow learners to cross the road. Explain the energy transformation that took place (1 mk)

_____

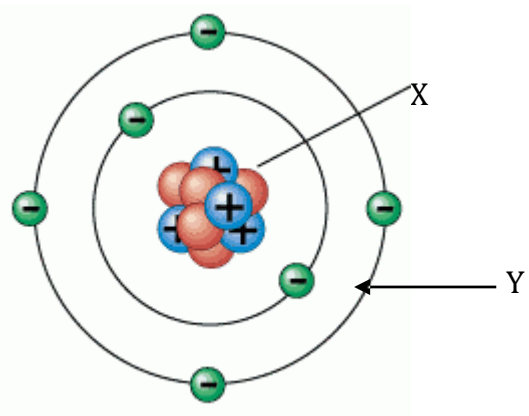
_____

43. Magnets can be used to reduce environmental pollution. How can this take place?

_____

_____

44. Use the diagram below to answer the questions that follow



a. Identify the part marked: (2mks)

i. X_____

ii. Y_____

b. What are the sub atomic particles found in the part marked x? (1 mk)

_____

45. Different elements are used to create a different substance. Write down the uses of the elements and compounds below. (2mks)

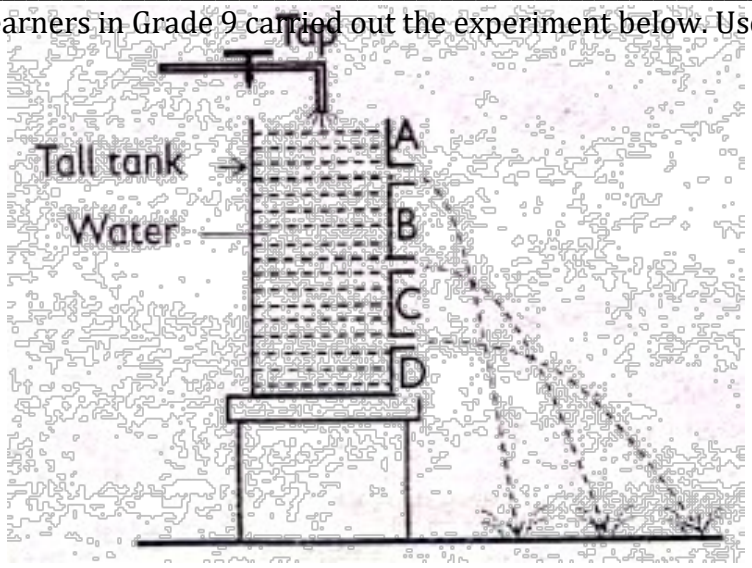
a) Sodium chloride_____

b) Gold_____

46. An element P has an atomic number of 7. Write down the electronic configuration of the element. (1mk

_____

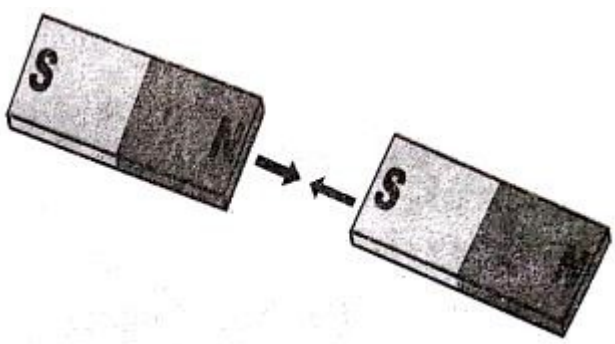
47. Learners in Grade 9 carried out the experiment below. Use it to answer the questions that follow.



a. What is the process being investigated? (1 mk)
_____.

b. Define the term pressure. (1 mk)
_____

48. Two grade 9 learners were carrying out an experiment using the magnets below. What is the expected observation that took place? (1mk)



_____

49. Explain why the shoe below exerts a higher pressure compared to flat shoes?

50. Grade 8 learner was carrying out an experiment in the laboratory. After finishing the practical, he drew the table below to record his findings. What are the expected outcomes?

SERIES 12
PAPER 2
Questions

SECTION 1

Practical Activity: Diffusion using potassium permanganate

Materials needed:

1. Potassium permanganate crystals or solution ($KMnO_2$)
2. Water
3. Beaker or glass container
4. Stopwatch or timer
5. Stirring rod

Steps to follow.

1. Fill a beaker or glass container with a small amount of water (about 200 ml).
2. Place a small crystal or two of potassium permanganate into the water. If using potassium permanganate solution, add a few drops to the water.
3. Observe the colour change and how the crystal or solution begins to spread through the water.
4. Without stirring, observe how the potassium permanganate moves through the water. Record the time it takes for the colour to noticeably spread across the water. Repeat the experiment with varying conditions like different water temperatures **(**cold and warm).
5. Record the effects of temperature and concentration on the rate of diffusion.

Questions

1. Identify the process that was being investigated.
   _____
   _____

2. What is the observation that was made after some time?
   _____
   _____

3. What happens if you use warm water instead of distilled water?
   _____
   _____

4. Explain the colour changes after some time.
   _____
   _____

2. **SECTION 2**

Modelling the electron arrangement of magnesium Materials to use for modelling

1. Paper or cardboard: To draw the atom and its energy levels.
2. Coloured markers or pens: To differentiate between the various energy levels and orbitals.
3. Stickers or beads: To represent the electrons visually.

Create a physical model of magnesium

1.What is the electron arrangement of magnesium.

_____

_____

2. Start by drawing the nucleus of magnesium and labelling it with 12 protons and 12 neutrons.

3. Draw three concentric circles around the nucleus to represent the energy levels.

4. Label each circle with the appropriate energy level.

5. Use the coloured markers or stickers to represent the electrons in each energy level (2 electrons in the first level, 8 in the second, and 2 in the third).

SERIES 13

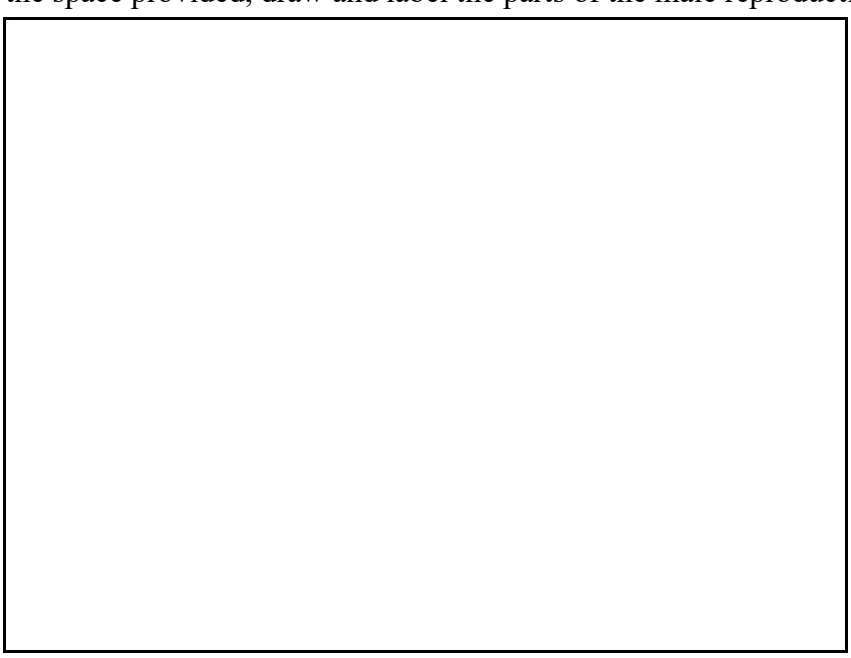
1. Discuss the meaning of Integrated Science (2mks)
   ……..……
   .....
2. Point out 3 main components of Integrated science. (3mk)
   (a) ……...
   (b) ……
   (c) ……..
3. Highlight the 3 main pathways in Senior school in accordance to Competence Based Assessment guidelines. (3mks)
   (a) ……...
   (b) ……
   (c) ……..
4. Identify the 4 main areas of study in STEM. (4mks)
   (a) ……...
   (b) ……
   (c) ……
   (d) .....
5. Highlight 2 importance of Integrated Science in daily life. (2mks)
   (a) ……...
   (b) ……
6. Discuss the meaning of a laboratory. (3mks)
   ……..……..
7. Taking of preventive measures to reduce or avoid harmful or risky situations that can cause damage is know as
   ……..(1mk).
8. Identify 3 main potential hazards in the laboratory and its environment. (3 mks).
   (a) ……...
   (b) ……
   (c) ……..
9. Identify the meaning of the sign. (1mk) .....

10. Identify 3 science skills (3mks)
    (a) ……...
11. What is the effect of a base on red litmus paper? ……..(2mks)
12. What is the effect of an acid on blue litmus paper? ……..(2mks)
13. Identify the SI unit for the following quantities and their abbreviations. (5mks)

Basic quantity	SI unit	Abbreviation
Temperature		
Length		
Mass		
Time		
Electric current		

14. The quantities calculated from two or more basic quantities are known as ……..... (1mk)
15. Identify 2 examples of derived quantities. (2mks)
    (a) ……...
    (b) ……
16. Identify 2 chemicals used in dissolving pigments in flower petals. (2mks).
    (a) ……...
    (b) ……
17. Highlight any 3 examples of acidic solutions. (3mks)
    (a) ……...
    (b) ……
    (c) ……..
18. Highlight the functions of the following parts of a burnsen burner. (8mks)
    Chimney…….....……
    …. Base
    …….....……..
    Rubber tubing …….....……..
    Jet …….....…….
19. The monthly series of changes that a woman's body goes through in preparation for possible pregnancy is known as ……. (1mk)

20. The chemical messangers secreted and transported in the blood to regulate different body processes are known as
    …… (1mk)
21. In the space provided, draw and label the parts of the male reproductive system. (4 mks)

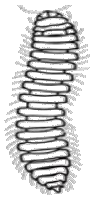
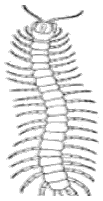
    

22. Identify four diseases transmitted by virus. (4mks)
    (a) .....
    (b) .....
    (c) .....
    (d) .....
23. State two types of decomposition. (2mks)
    (a) .....
    (b) .....
24. What do you understand by the term 'mutations'? (2mks)
    .....
    . .....
25. Briefly describe how virus multiply. (2mks)

26. State 3 ways of preserving left overs. (3mks)
    (a) .....
    (b) .....
    (c) .....
27. What do you understand by the term 'Non-communicable diseases'? (2mks)
    .....
    .....
28. Name four organs making up the digestive system. (4mks)
    (a) .....
    (b) .....
    (c) .....
    (d) .....
29. What is the role of dietary fibre in health promotion. (2mks)
    .....
30. Write two importance of water in the diet. (2mks)
    (a) .....
    (b) .....
31. State two ways of preventing conditions and diseases affecting the circulatory system. (3mks)
    (a) .....
    (b) .....
32. Differentiate between " macro" and "micro nutrients". (4mks)
    .....
    .....
    .....
    .....
33. How many glasses of water should one drink daily? (1mk)
    .....
34. State three importance of studying Health Education in school. (3mks)
    (a) .....
    (b) .....
    (c) .....
35. Identify sources of vitamin A. (1mk)
    .....
36. Outline three factors that affect mental wellbeing. (3mks)
    (a) .....
    (b) .....
    (c) .....
37. John has been invited to a village to talk about personal hygiene.State three personal hygiene practices he is likely to mention. (6mks)
    (a) .....
    (b) .....
    (c) .....

SERIES 14

1. **Antony walked around the school and saw the following insects in the field. He collected and labelled them A and B as shown below.**

A  **B** 

(a) Name each one of them [2marks]

(i) A - .....

(ii) B - .....

(b) State two common characteristics in both of them. [2marks]

(i) .....

(ii) .....

2. **Timothy attended a meeting in which they were talking about insects in our environment. State two importance of insects in our environment. [2marks]**

(a) .....

(b) .....

3. **John and Jane went to the Integrated Science fair in Mombasa and interviewed some people on the importance of science. State three importance of the study of integrated science. [3marks]**

(a) .....

(b) .....

(c) .....

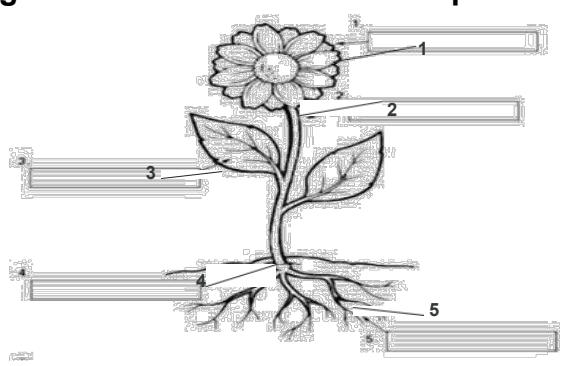
4. **During an experiment in the laboratory, Ali accidentally dropped a test tube and broke it. While colecting it, he was cut deeply on the fingers. State three first aid measures he should perform. [3marks]**

(a) .....

(b) .....

(c) .....

5. **A grade seven learner drew the plant below on a manila paper.**



(a) Name the parts of the plant above. [5marks]

1. .....

2. .....

3. .....

4. .....

5. .....

(b) Which type of root does the plant above have?..... [1mark]

6. Rehema a grade seven integrated science teacher collected the follwing materials when investigating friction; Match box, match stick and pencil. State three advantages of friction from the findings in the experiment. 3marks]

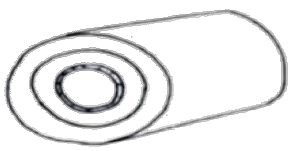
(a) .....

(b) .....

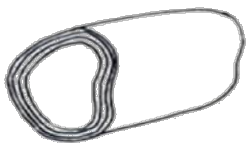
(c) .....

7. With the help of the teacher, Sam searched online for different images of types of blood vessels and their functions.

A



B



C

(a) Label each type of blood vessel [3marks]

A - .....

B - .....

C - .....

(b) State one functions for each. [3marks]

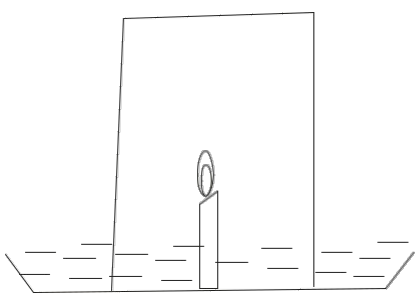
A - .....

B - .....

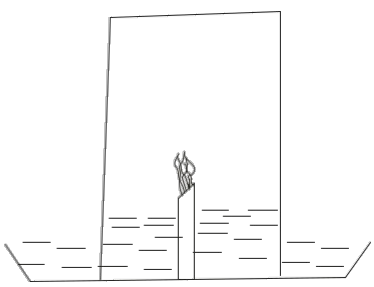
C - .....

8. Grade seven learners were experimenting on the components of air in the atmosphere as shown below.

A



B



(a) Account for the observation in diagrams A and B [2marks]

.....

.....

(b) Which part of air supports burning? ..... [1mark]

9. Albert, Hamisi and Rehema attended the school career week at their school. State two career opportunities related to the knowledge and skills gained in Integrated Science. [2marks]

(a) .....

(b) .....

10. Egesa went to the computer laboratory to do some calculation and record some data for his class report.

(a) Write down the procedure he used when creating the spreadsheet document. [2marks]

.....

.....

(b) After finishing the task, write down the process of saving the data. [2marks]

.....

.....

11. Kamkir hospital had a shortage of blood and visited Kamkir school for learners to assist in donation of blood. Kiptoo could not donate blood to all blood groups but could receive blood from all blood groups. Which blood group is kiptoo? ..... [1mark]

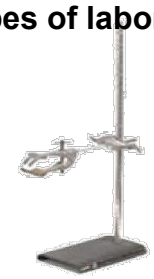
12. Match the following quantities with their SI units. (5mks)

Quantity	SI unit
time	metre
length	kilogram
electric current	second
mass	ampere
temperature	kelvin

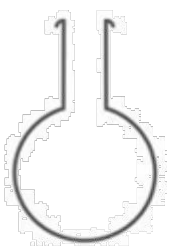
13. Ann and her classmates were doing an experiment on mass of different objects in class. If they had a block of wood which weighed 170kgs and had a volume of 20.5m³, calculate the density of the wooden block. [2marks]

14. Grade 7 learners were taken to the school laboratory and were introduced to different types of laboratory apparatus.

P



Q



(a) Name the laboratory apparatus above [2marks]

P - .....

Q- .....

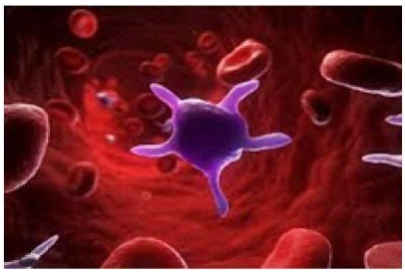
(b) Write two ways in which we handle the apparatus marked 'Q'. [2marks]

.....

.....

15. Plants have leaves that help them remove excess water through a process called ..... [1mark]

16. During an Integrated Science lesson, Mr. Kamau asked the learners to identify solid parts in blood. Erick identified the part below. What is it called? ..... [1mark]



SERIES 15

PAPER 1

1. Grade six learners were asked by their teacher to collect two different types of roots and mount them on a cardboard. The picture below shows what they did.

It is true to say that root A is a_____while root B is a _____(2mks)

2. List four physical changes that take place in girls during the adolescent period. (4mks)

3. Define the term spreadsheet and state two of its uses.

   a) Definition

   b) Uses

4. Write down the meaning of the following words used in water conservation.(3mks)

   (a) Reducing

   (b) Reusing

   (c) Recycling

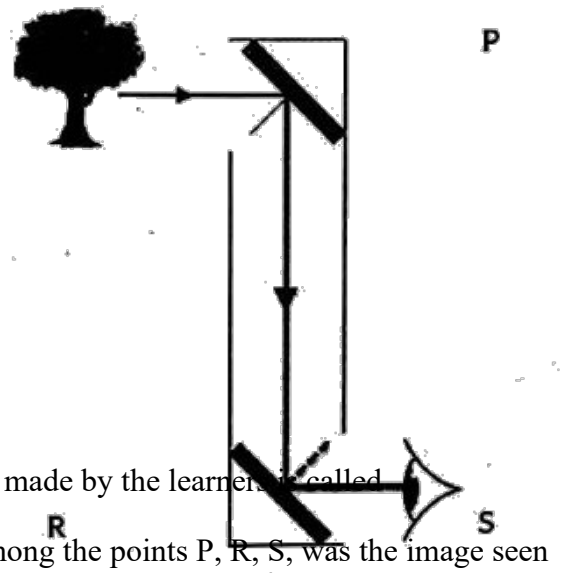
5. Grade 7 learners were asked to list components of Integrated Science. Write down three components they listed.

6. Which gas is used by plants to make proteins?(1mk)

7. State three uses of Carbon Dioxide.

8. State any two ways of reducing friction.(2mks)

9. During a science project, learners made an instrument and used it to observe an object as shown below.



(a) The instrument made by the learners is called

(b) From which among the points P, R, S, was the image seen

10. Give two types of reflection.

11. List down two main differences between arteries and veins.(2mks)

12. Identify any two career opportunities related to knowledge and skills gained in Integrated Science.

13. **HEALTH EDUCATION**

Define the terms health and health education

(a) Health

(b) Health education

14. Write down three practices you observe to maintain good health.(3mks)

15. State four importance of health education for healthy living(4mks)

16. List two types of diseases that can be prevented through studying Health Education. (2mks)

17. Name two career opportunities in health education.(2mks)

18. Identify three community activities that help to promote good health.(3mks)

19. Identify the functions of the following nutrients.

Food	Function
Protein	
Carbohydrates	
Vitamins	

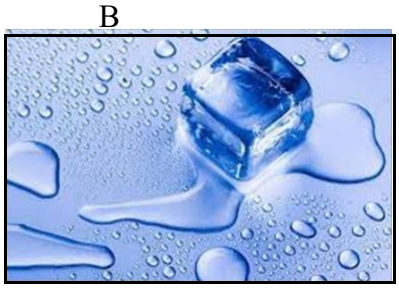
20. What is the role of water in the body?(1mk)

SERIES 16

1. Grade 7 learners used print media resources to search for information on various components of Integrated Science. They later presented the following pictures in class.

A

B



(a) Which components of Integrated Science did the learners research about in each picture?

..... (2 marks)

.....

(b) Give a reason for your answers in (a) above. (2 marks)

.....

.....

2. Sheila obtained the following injury aft**er c**onducting an experiment in the school laboratory.

(a) Name the type of injury the learner obtained. ..... (1 mark)

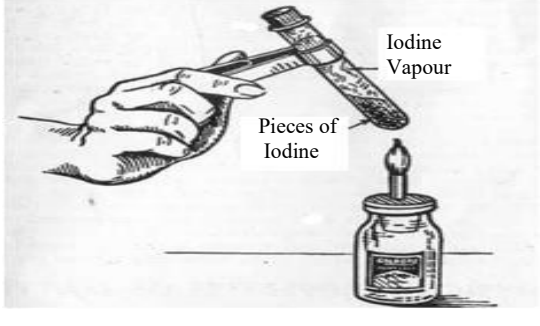
(b) Identify the likely cause of the injury. ..... (1 mark)

(c) Briefly describe how you would administer first aid to the type of injury identified in (a) above.

..... (2 marks)

.....

3. Mueni, a grade 7 learner was heating a chemical substance in the laboratory as shown in the picture below.



(a) State two basic skills in science the learner used. (2 marks)

....

....

(b) State the importance of the skills stated in (a) above in our day to day lives. (1 mark)

....

(c) State one safety measure Mueni observed when carrying out the experiment. (1 mark)

....

4. A group of learners were tasked by their science teacher to identify the SI units of the quantities displayed in the table below.

A	B	C
		

.....	.....

Identify the basic quantity in each picture and state its SI unit. (3 marks)

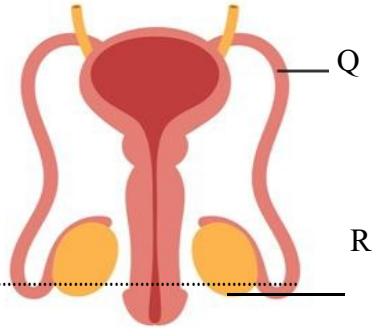
5. Duncan and Teresa wanted to separate the following mixtures. Which method would be suitable for separating the mixtures below? (3 marks)

(a) Copper (II) sulphate crystals dissolved in water

(b) Groundnut oil and water.....

(c) Common salt and aluminium (III) chloride.....

6. The picture shows a human reproductive system. Study it carefully and then answer the questions that follow.



(a) Name the parts labelled Q and R. ..... (2 marks)

(b) State the function of the part labelled R. (1 mark)
.....

7. The following picture shows a bottle with hazard symbols in a science laboratory. Study it carefully then answer the question that follow.

(a) State the likely nature of the chemical inside the bottle. (2 marks)
.....
.....

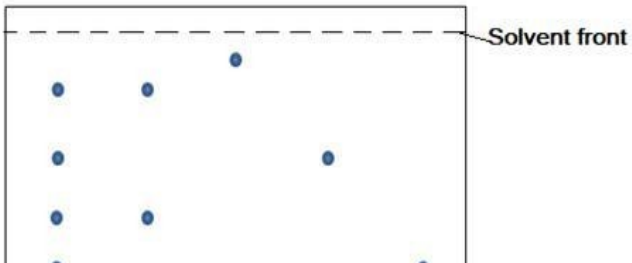
(b) Give a reason for your answer in (a) above. (1 mark)
.....
.....

8. During a Parent's Day in a nearby school, parents were served with water in plastic bottles. After the event, a group of Grade 7 learners were tasked to collect the bottles. One of the learners noted some information on the plastic bottles.

(a) What pieces of information did the learners likely observe? (2 marks)
.....
.....
.....
.....

(b) State two importance of the information stated in (a) above in the labels. (2 marks)
.....
.....
.....
.....

9. A group of Grade 7 learners set up an experiment to determine the presence of substances P, Q, R and S in mixture T. They later obtained the following results.



(a) Identify the method of separation illustrated in the figure above.
.....
.....
.....

(b) Select:

(i) One substance which contains a component not present in T.
.....
.....
.....
.....
.....
.....
.....
(1 mark)

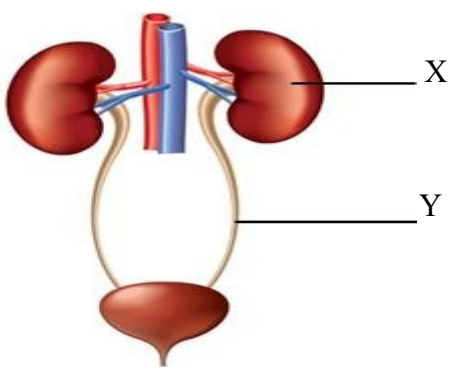
(ii) A substance

which is least soluble in the solvent used. Give a reason for your answer. (1 mark)
.....
.....

10. Omari and Mueni were provided with the following: thermometer, boiling tube, beaker, Bunsen burner, pure substance X whose boiling point is about 80 ^{o}C, water and any other apparatus that may be required. Draw a labelled diagram of the set-up that can be used to determine the melting point of X. (3 marks)

11. A mixture contains Iron (III) chloride and sodium chloride. Describe how each of the substances can be obtained from the mixture. (3 marks)
.....
.....
.....

12. Richard, a Grade 7 learner from Utumishi Primary School drew a diagram of the urinary system as shown below.



(a) Identify the parts labelled X and Y. (2 marks)
.....
.....

(b) Indicate on the diagram using letter Z the part responsible for passing out urine from the body. (1mark)

(c) Apart from excess salts, excess water and urea, name one other substance excreted from the kidney.
.....(1 mark)

13. Some learners were tasked by their integrated Science teacher to search for information from print media and digital devices connected to the internet on healthy lifestyles that promote kidney and skin health. What information are they likely to obtain? (3 marks)
.....
.....
.....

14. A grade 7 learner was tasked by his teacher to state two functions of the kidney. What functions did he likely give? (2 marks)
.....
.....

15. Baking powder is a common substance used in our day to day lives in cooking *mandazi*.
(a) Name one base and one acid present in baking powder. (2 marks)
.....
.....

(b) What is the function of the acid stated in (a) above in baking powder? (2 marks)
.....