Meghalaya Board
Class X
Science and Technology
Sample Paper 2

Time allowed: 3 hours **Maximum Marks: 80**

General Instructions:

1. Write all the answers in the Answer Script.
2. Attempt all parts of a Group serially in one place.
3. The figures in the margin indicate full marks for the questions.
4. This question paper comprises of three sections A, B and C.
5. The candidates are advised to attempt all the questions of sections A, B and C separately.
6. Marks allocated to every question are indicated against it.

SECTION- A

(PHYSICS)

(Marks- 26)

Answer the following very short answer type questions in one sentence each: **1 X 4=4**

1) Name the energy possessed by moving and stationary currents of water. **1**

2) What is meant by potential difference between two points? **1**

3) Ravi kept a book at a distance of 10 cm from the eyes of his friend Hari. Hari is not able to read anything written on the book. Explain why. **1**

4) Give two characteristics of the image formed by a concave lens. **1**

Answer the following very short answer type questions in 20-30 words each:

2 X 4=8

5) The refractive index of water is 1·33 and the speed of light in air is 3×10^8 ms^{-1}. Calculate the speed of light in water. **2**

6) Why does it take some time to see objects in a cinema hall when we just enter the hall from bright sunlight? Explain in brief. **2**

7) An electric geyser works in a 230V supply which draws a current of 6A for 5 minutes. Find out the quantity of heat produced in the heater. **2**

8) On what principle does electric motor works? **2**

Answer the following short answer type questions in 30-40 words each:

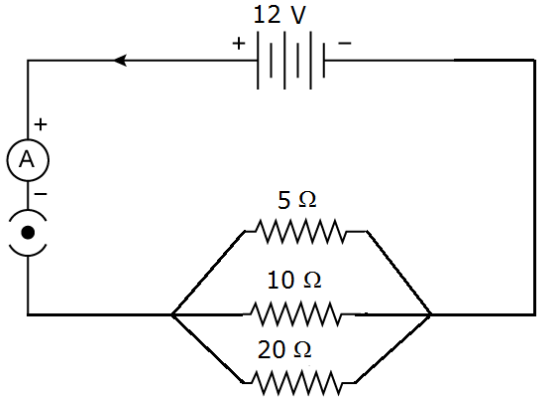
3 X 3=9

9) **3**

(a) Draw a schematic labelled diagram of a domestic wiring circuit which includes
(i) A main fuse
(ii) A power meter
(iii) One light point
(iv) A power output socket

(b) On which wire in the circuit is the mains on/off switch connected?

10) In the circuit below, three resistors of 5Ω, 10Ω and 20Ω, respectively, are connected across a battery of 12V. **3**



Calculate:
(a) Current through each resistor
(b) Total current in the circuit
(c) Total resistance of the circuit

Or

An electrical appliance is rated 200 V–100 W. What is the resistance of the appliance? Five such appliances run simultaneously for 4 hours. What is the energy consumed? Calculate the cost of running these appliances if the per unit cost is Rs 4.60.

11) Answer the following: **3**

(a) What according to you happens to the eyes when you enter a darkened room from bright sunlight?
(b) Suggest how the iris helps protect the retina from damage by bright light.
(c) How do you compare the defect of a person wearing spectacles of +1.5 D to the one wearing spectacles of –1.5 D?

Answer the following long answer type question in 50-60 words each: 5

12)

(a) What are magnetic field lines? How is the direction of the magnetic field at a point determined?

(b) Draw two field lines around a bar magnet along its length on its two sides and mark the field directions on them by showing arrows.

(c) List any three properties of magnetic field lines.

(3+2)=5

Or

Name the type of mirrors used in (a) solar furnace and (b) rear-view mirror. Draw labelled diagrams to show the formation of image in each of the above two cases. Which of these mirrors could also form a magnified and virtual image of an object? Illustrate with the help of a ray diagram.

SECTION -B
(CHEMISTRY)
(Marks-26)

Answer the following very short answer type questions in one sentence each: **1 X 3=3**

13) How many horizontal rows are there in the modern periodic table and what are they called? **1**

14) State in brief a chemical test to distinguish between ethanol and ethanoic acid. **1**

15) What is the valency of potassium and oxygen in potassium oxide? **1**

Answer the following very short answer type questions in 20-30 words each:

2 X 3=6

16) How can you differentiate saturated and unsaturated hydrocarbons on the basis of burning behaviour? **2**

17) Explain how pH change in the lake water can endanger the lives of aquatic animals (like fish). **2**

18) Why are packets of chips flushed with nitrogen? **2**

Answer the following short answer type questions in 30-40 words each:

3 X 4=12

19) What happens when **3**

(a) Zinc reacts with copper sulphate?
(b) Magnesium reacts with HCl?
(c) Sodium reacts with water?

20) An element reacts with oxygen to form an oxide which dissolves in dilute hydrochloric acid. The oxide formed also turns a solution of red litmus blue. Is the element a metal or non-metal? Explain with a proper example. **3**

21) You are provided with three test tubes A, B and C which contain distilled water, acidic and basic solutions. If you are given blue litmus paper only, how will you identify the nature of the solutions in the three test tubes? **3**

Or

Write the chemical formula of washing soda and baking soda. Which of these two is an ingredient of antacids? How do antacids provide relief in stomachache?

22) Define atomic radius of an element. How does it vary along the period and group? **3**

Answer the following long answer type question in 50-60 words each: 5

23) A quiz contest was being held in the school for chemistry students. The quiz-master said:

An element has the electronic configuration 2, 8, 7.

(a) What is the atomic number of this element?
(b) Is it a metal, non-metal or metalloid?
(c) Which of the elements N, F, P and Ar shows similarity with this element?
(d) We use a compound of this element in our food. Identify that compound.
(e) A compound of this element causes hardness of water. Identify that compound.

Or

An organic compound A is widely used as a preservative in pickles and has molecular formula $C_2H_4O_2$. This compound reacts with ethanol to form a sweet smelling compound B.

(a) Identify compound A.
(b) Write the chemical equation for its reaction with ethanol to form compound B.
(c) How can we get compound A back from B?
(d) Name the process.
(e) Which gas is produced when compound A reacts with washing soda?

SECTION -C
(BIOLOGY)
(Marks-28)

Answer the following very short answer type questions in one sentence each: 1 X 4=4

24) Name two tissues which provide control and coordination in multicellular animals. **1**

25) In which three forms, animals excrete excess of nitrogen? **1**

26) Name the hormone that controls the rate of respiration. Also name the part of the brain responsible for controlling respiration. **1**

27) Give an example where environmental factors play a major role in sex determination. **1**

Answer the following very short answer type questions in 20-30 words each:

2 X 5=10

28) Will geographical isolation be a major factor in the speciation of an organism which reproduces asexually? Give reason for your answer. **2**

29) Define the process of ovulation briefly. **2**

30) Why does the stem of a plant always show negative geotropism? **2**

31) If the kidney failure cannot be treated by drugs or dialysis what advice is given to the patient? **2**

32) Describe the mechanism that determines the sex of a child. **2**

Answer the following short answer type questions in 30-40 words each:

3 X 3=9

33) What is translocation? Why is it essential for plants? Where in plants are the following synthesised: (i) Sugars, (ii) Hormones **3**

34) Differentiate between 'self-pollination' and 'cross pollination.' Describe 'double fertilisation' in plants. **3**

35) Describe briefly the origin of earliest members of human species and how they were spread in different parts. **3**

Or

Explain the theory of natural selection given by Darwin.

Answer the following long answer type question in 50-60 words each: **5**

36)

(a) Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds?

(b) Explain how lungs are designed in human beings to maximise the area for exchange of gases. Why does the air passage not collapse when there is no air in it?

Or

What is speciation? List four factors which could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species? Explain.