Mizoram Board
Class X Science
Sample Paper 2

Time allowed: 3 hours **Maximum Marks: 70**

General Instructions:

1. The question paper consists of 39 questions.
2. All questions are compulsory.
3. Internal choices have been provided in some questions.
4. Marks allocated to every question are indicated against it.

Choose the correct answer from the given alternatives: **1 X 14=14**

1. Whenever light goes from one medium to another, the characteristic that does not change is
(i) Frequency
(ii) Wavelength
(iii) Velocity
(iv) Colour

2. The colour which deviates least in the formation of spectrum of white light by a prism is
(i) Red
(ii) Yellow
(iii) Violet
(iv) Green

3. At the time of short circuit, the current in the circuit
(i) increases heavily
(ii) does not change
(iii) reduces substantially
(iv) vary continuously

4. Magnetic lines of force originate from the
(i) South pole
(ii) North pole
(iii) Center point
(iv) Either North Pole or South Pole

5. The main constituent of biogas is
(i) Methane
(ii) Ethylene
(iii) Hydrogen and Oxygen
(iv) Oxygen and Ethane

6. Elements of Group 16 have 6 valence electrons. The valency of Group 16 elements is
(i) 2
(ii) 6
(iii) 3
(iv) 5

7. Which of the following will show covalent bonding?
(i) NaCl
(ii) KCl
(iii) $MgCl_2$
(iv) Cl

8. Anodising is done in case of
(i) Aluminium
(ii) Copper
(iii) Sodium
(iv) Iron

9. Which of the following acid is a weak acid?
(i) HCl
(ii) H_2SO_4
(iii) CH_3COOH
(iv) HNO_3

10. Within a cell, the breakdown of pyruvate into carbon dioxide and water occurs in
(i) Cytoplasm
(ii) Mitochondria
(iii) Nucleus
(iv) Ribosomes

11. Which of the following response is not evoked by adrenaline?
(i) Heart beats faster
(ii) Reduces blood supply to skin
(iii) Increased blood supply to digestive system
(iv) Increased rate of breathing

12. In which of the following grafting is very useful?
(i) Rose
(ii) Mango
(iii) Opuntia
(iv) Cactus

13. The first human-like creature found in East African grasslands was known as
(i) Homo habilis
(ii) Dryopithecus
(iii) Australopithecus
(iv) Ramapithecus

14. Out of the given options, which groups of people are concerned with conserving nature in its pristine form in forests?
(i) The forest department
(ii) The industrialists
(iii) Wildlife and nature enthusiasts
(iv) The locals living in and around the forests

Answer the following questions in one word or one sentence: 1 X 7=7

15) What is meant by translocation with respect to transport in plants?
16) What do you mean by the term water harvesting?
17) In which form food is transported in the plants?
18) What is aqua regia?
19) Why is it advised not to use copper or brass vessels to store pickles or curd?
20) Which of the following has more resistivity? A thick wire or a thin wire of the same material.
21) Why sky looks dark to astronomers?

Answer the following questions in about 20-30 words: 2 X 8=16

22) Electrical resistivity of silver is $1{\cdot}60 \times 10^{-6}$ Ωm. What will be the resistance of a silver wire of length 10 m and cross-sectional area 2×10^{-3} m^2?

23) A brown substance 'X' on heating in air forms a compound 'Y'. When hydrogen gas is passed over 'Y', it changes to 'X' again.
(i) Name substances 'X' and 'Y'.
(ii) Name the processes occurring during the two changes.

Or

$Zn + CuSO_4 \longrightarrow ZnSO_4 + Cu$
Identify the oxidizing and reducing agent. Give reason.

24) Describe how decomposers facilitate recycling of matter in order to maintain balance in the ecosystem.

25) What can you say about the pH of salts?

26) On what principle does electric motor works?

27) Leaves of Bryophyllum fallen on the ground produce new plants. Why?

28) Define the term refractive index of a medium. Can it be less than 1?

29) Why is it said that we have to avoid our personal goals for conservation of natural resources? Explain with the help of an example.

Answer the following questions in about 40-60 words: 3 X 7=21

30) What is a reflex action? Describe the steps involved in a reflex action.

31) Explain natural selection with the help of suitable examples.

Or

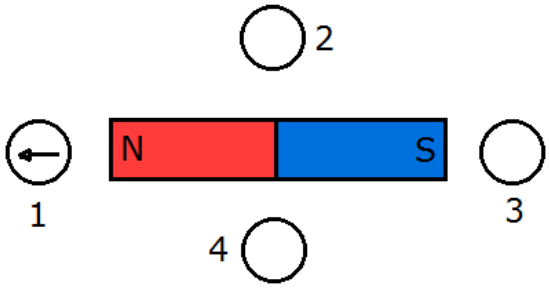
Distinguish between biodegradable and non-biodegradable substances. List two effects of each of them on our environment.

32) Ethanol is used on a large scale at a commercial level. It is commonly called alcohol and is an active ingredient of alcoholic drinks. Yet, consumption of alcohol also causes drunkenness and this practice is socially condemned. As a responsible student of Class X, what steps you would take to discourage the use of alcohol?

33) A water-insoluble calcium compound (A) on reacting with dil. H_2SO_4 released a colourless and odourless gas (B) with brisk effervescence. When this gas (B) was passed through lime water, the lime water turned milky and again formed compound A. Identify A and B, and write the chemical equations for the reactions involved.

34) A student wants to obtain an erect image of an object using a concave mirror of 12 cm focal length. What should be the range of distance of the object from the mirror? State the nature and size of the image he is likely to observe. Draw a ray diagram to justify your answer.

35) The diagram below shows a bar magnet surrounded by 4 compasses. What directions will the compasses 2, 3 and 4 show?



36) You are given two solar cookers, one with a plane mirror as reflector and the other with concave mirror as reflector. Which one is more efficient? Give reason for your answer. State one more use of concave mirror.

Answer the following questions in about 70-100 words: 4 X 3=12

37) Explain the process of photosynthesis in plants. List four factors which influence this process and describe how each of them affects the rate of photosynthesis process.

38)

(a) Derive an expression for the heat produced in a conductor of resistance R when a current I flows through it for time t.

(b) Two identical resistors of resistance R are connected in series with a battery of potential difference V for time t. The resistors are then connected in parallel with the same battery for the same time t. Compare the heat produced in the two cases.

39) Explain with an example how Metal X which is low in reactivity series and Metal Y which is high in reactivity series are obtained from their compounds by the reduction process.

(a) Write the electronic configurations of sodium and chlorine. Show the formation of sodium chloride from sodium and chlorine by the transfer of electrons.

(b) List any two observations when a highly reactive metal is dropped in water.