

**Nagaland Board
Class X Science
Sample Paper 1**

Time allowed: 3 hours

Maximum Marks: 80

General Instructions:

1. Approximately 15 minutes is allotted to read the question paper and revise the answers.
2. The question paper consists of 26 questions. All questions are compulsory.
3. Internal choices have been provided in some questions.
4. Marks allocated to every question are indicated against it.

1) Choose the correct answer from the given alternatives:

- (a) Which blood vessel carries blood to the kidney? **1**
(i) Renal artery
(ii) Renal vein
(iii) Vena cava
(iv) Aorta
- (b) Central canal of the spinal cord contains: **1**
(i) Pleural fluid
(ii) Cerebrospinal fluid
(iii) Interstitial fluid
(iv) Aqueous humour
- (c) Sperm transfer in males can be prevented by blocking the **1**
(i) Prostate gland
(ii) Vas deferens
(iii) Seminal vesicles
(iv) Urethra
- (d) The normal number of chromosomes in the progeny is maintained when the germ cells **1**
(i) divide by the process of mitosis
(ii) take one chromosome from each pair
(iii) take all maternal and paternal chromosomes
(iv) divide by mitosis and take all maternal and paternal chromosome

- (e) During the chlor - alkali process, which gas is liberated at anode and cathode respectively? **1**
(i) Anode : O_2 , Cathode : Cl_2
(ii) Anode : O_2 , Cathode : H_2
(iii) Anode : Cl_2 , Cathode : H_2
(iv) Anode : H_2 , Cathode : Cl_2
- (f) The process in which ores are changed into oxides by heating strongly in limited air is known as **1**
(i) Roasting
(ii) Calcination
(iii) Galvanisation
(iv) Electrolytic refining
- (g) In conversion from ethanol to ethene, concentrated sulphuric acid is used as **1**
(i) Oxidizing agent
(ii) Reducing agent
(iii) Dehydrating agent
(iv) Precipitating agent
- (h) The black coating on silver is due to **1**
(i) Displacement reaction
(ii) Combustion reaction
(iii) Corrosion
(iv) Decomposition reaction
- (i) If the refractive index of two media are equal, then **1**
(i) Light will reflect in the same medium
(ii) Interface will absorb the light
(iii) No refraction will occur
(iv) It will bend away from the normal
- (j) Power plant that uses kinetic and potential energy of water to generate electricity is called **1**
(i) Hydroelectric Power plant
(ii) Nuclear Power Plant
(iii) Thermal Power Plant
(iv) Biogas Power Plant

Answer the following questions in one word or one sentence:

- 2)** What is meant by potential difference between two points ? **1**
3) Why do fish die when taken out of water? **1**
4) An electric heater is used on a 220-V supply and it consumes a current of 3.4 A. Calculate: (i) its power and (ii) its resistance when it is in use. **1**

- 5) What is the reaction which takes place when baking soda is heated for cooking? Give the use of carbon dioxide produced in this reaction. **1**
- 6) Use of paper bags is more environment friendly than the use of polythene bags for packaging. Justify. **1**

Answer the following questions in about 20-30 words:

- 7) Why do we use fuses in household circuits? **2**
- 8) When do we apply Fleming's right hand rule? Also state Fleming's right hand rule. **2**
- 9) Using balanced chemical equation, explain the difference between a displacement reaction and a double displacement reaction. **2**
- 10) How can it be said that birds are closely related to reptiles? **2**
- 11) Define the process of ovulation briefly. **2**

Answer the following questions in about 40-60 words:

- 12) Give reasons for the following: **3**
- (a) The glottis is guarded by the epiglottis.
- (b) Lung alveoli are covered with blood capillaries.
- (c) The tracheal wall is supported by cartilaginous rings
- 13) Why is the rate of breathing much faster in aquatic organisms than in terrestrial organisms? **3**
- 14) The genotype of green stemmed tomato plants is denoted as GG and that of purple stemmed tomato plants is denoted as gg. When these two are crossed with each other:
- (a) What colour of stem would you expect in the F1 progeny?
- (b) Give the percentage of purple stemmed plants if F1 plants are self-pollinated **3**
- 15) We hear and read about female foeticide which is really a wrong practice. In some families, be it rural or urban, females are tortured for giving birth to a girl child. They do not seem to understand the scientific reason behind the birth of a boy or a girl. In your opinion, the approach of society towards the mother in this regard is correct or not? Explain the scientific reason. **3**

16) **3**

- (a) How is plaster of Paris chemically different from gypsum? How may they be interconverted? Write one use of plaster of Paris.
- (b) State the relation between hydrogen ion concentration of an aqueous solution and its pH. Provide the formula to show the relation between hydrogen ion concentration and pH.

17) Give reasons for the following: **3**

- (a) Oxidation of ethanol with CrO_3 produces ethanal, while ethanol when oxidised with alkaline KMnO_4 produces ethanoic acid.
- (b) Propanone forms addition product with HCN.
- (c) Alcohol supplied for industrial purposes is mixed with copper sulphate

18) No chemical reaction takes place when granules of a solid A are mixed with the powder of another solid B. However, when the mixture is heated, a reaction takes place between its components. One of the products, C, is a metal and settles in the molten state, while the other product D floats over it. It was observed that the reaction is highly exothermic.

Based on the given information, make an assumption about A and B and write a chemical equation for the chemical reaction indicating the conditions of reaction, physical state of reactants and products and thermal states of the reaction. Mention any two types of reactions under which the above chemical reaction can be classified. **3**

19) How can a magnetic field be produced without using a magnet? Describe an experiment to show that a magnetic field exerts a force on a current-carrying conductor. **3**

20) Define the term dispersion of white light. Name the colour of light which bends (i) the most, (ii) the least, while passing through a glass prism. Draw a ray diagram to justify your answer. **3**

21) The image of an object placed at 60 cm in front of a lens is obtained on a screen at a distance of 120 cm from it. Find the focal length of the lens. What would be the height of the image if the object is 5 cm high?

OR

A convex mirror used on a bus has a focal length of 200 cm. If a scooter is located at 400 cm from this mirror, find the position, nature and magnification of the image formed in the mirror. **3**

Answer the following questions in about 70-100 words:

22) An organic compound A having the molecular formula C_3H_8O is a liquid at room temperature. The organic liquid A reacts with sodium metal to evolve a gas which burns causing a little explosion. When the organic liquid A is heated with concentrated sulphuric acid at $170^\circ C$, it forms a compound B which decolourises bromine water. The compound B adds one molecule of hydrogen in the presence of Ni as a catalyst to form compound C which gives substitution reactions with chlorine.

- (a) What is compound A?
- (b) What is compound B?
- (c) What type of reaction occurs when A is converted to B?
- (d) What is compound C?
- (e) What type of reaction takes place when B is converted to C? **5**

23) **5**

- (a) List the factors on which the resistance of a conductor depends.
- (b) A 4-kW heater is connected to a 220-V power source. Calculate
 - (i) The electric current passing through the heater.
 - (ii) The resistance of the heater.
 - (iii) The electric energy consumed in a 2-hour use of the heater.

24) What is meant by power of a lens? Name and define its SI unit.
One student uses a lens of focal length $+50$ cm and another of -50 cm. State the nature of each lens and find their powers. Which of the two lenses will always give a virtual, erect and diminished image irrespective of the position of the object?

25)

- (a) Draw a diagram of the human alimentary canal and label the following: **5**
 - (i) Part in which starch digestion starts.
 - (ii) Part in which bile is stored.
 - (iii) Part in which nutrients are absorbed
- (b) Mention the role of hydrochloric acid in the stomach.
- (c) What function is served by the following?
 - (i) Gastric sphincter
 - (ii) Anal sphincter

OR

- (a) Write three main steps that take place in chloroplast during photosynthesis.
- (b) How does stomata open and close?
- (c) Which raw material is made available to plants for photosynthesis when stomata are open?

26)

5

- (a) Give three advantages of rain-harvested water stored underground.
- (b) Forests cannot be conserved only by legislation; local human intervention is also required'. Justify your answer with two examples