

**Nagaland Board
Class X Science
Sample Paper 2**

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 of the following is an example of exhaustible source of energy? **1**
- (i) Air
 - (ii) Water
 - (iii) Coal
 - (iv) Biogas
- (b) What is the full form of UNEP? **1**
- (i) United Nations Educational Programme
 - (ii) United National Environment Programme
 - (iii) United Nations Environmental Programme
 - (iv) United Nations Environment Programme
- (c) Which of the following processes come into existence when variations are associated with geographical isolation? **1**
- (i) Evolution
 - (ii) Sexual reproduction
 - (iii) Speciation
 - (iv) Natural selection
- (d) Which of the following products are reabsorbed in the tubular part of nephron? **1**
- (i) Urea
 - (ii) Ammonia
 - (iii) Glucose
 - (iv) Uric acid

- (e) What would be the effect on the current if the resistance is increased while the voltage remained constant? **1**
 (i) current would increase
 (ii) current would increase exponentially
 (iii) current would decrease
 (iv) current would remain constant
- (f) A lens which forms a virtual and enlarged image is **1**
 (i) Convex lens
 (ii) Concave lens
 (iii) Diverging lens
 (iv) Both concave and convex lens
- (g) Name the functional group of the product formed when ethanol reacts with ethanoic acid. **1**
 (i) Ester
 (ii) Aldehyde
 (iii) Ketone
 (iv) Ether
- (h) Which of the following metal shows useful corrosion? **1**
 (i) Silver
 (ii) Copper
 (iii) Aluminium
 (iv) Iron
- (i) Sodium hydroxide is an example of **1**
 (i) Weak base
 (ii) Strong acid
 (iii) Strong base
 (iv) Weak acid
- (j) A drop of colourless liquid is poured over blue litmus paper and it turns to red. The colourless liquid is **1**
 (i) Potassium hydroxide solution
 (ii) Sodium chloride solution
 (iii) Pure water
 (iv) Dilute hydrochloric acid

Answer the following questions in one word or one sentence:

- 2)** Name the device that directly converts solar energy to electric energy. **1**
3) What is the chemical formula of bleaching powder? **1**
4) Why is electrolysis of water an endothermic reaction? **1**
5) Which plant hormone promotes dormancy of seeds? **1**
6) What is the main function of fallopian tubes? **1**

Answer the following questions in about 20-30 words:

- 7) What will happen if the blood is deficient in haemoglobin? **2**
- 8) On what principle does electric motor works? **2**
- 9) Describe the biogenetic law. **2**
- 10) What can you say about the pH of salts? **2**
- 11) Why fuels such as coal and petroleum are major pollutants in air? **2**

Answer the following questions in about 40-60 words:

- 12) What is a reflex action? Describe the steps involved in a reflex action **3**
- 13) Explain natural selection with the help of suitable examples. **3**

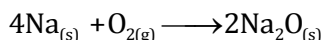
OR

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

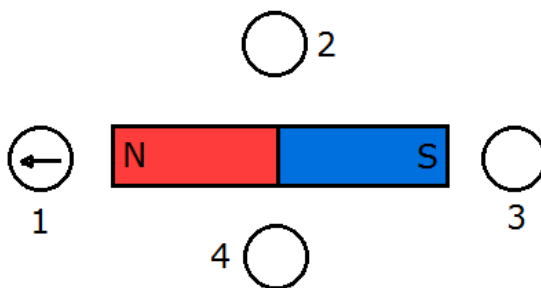
- 14) A student wants to obtain an erect image of an object using a concave mirror of 12 cm focal length. What should be the range of distance of the object from the mirror? State the nature and size of the image he is likely to observe. Draw a ray diagram to justify your answer. **3**
- 15) Consider the following elements: Na, Ca, Al, K, Mg and Li. **3**
- (a) Which of these elements belong to the 3rd period of the modern periodic table?
- (b) Which of these elements belong to Group 1 of the modern periodic table? Which of these elements show a valency of +3?
- 16) Is it true that when a new species emerges, the old species is eliminated and why? **3**
- 17) What is organic evolution? How do embryological studies provide evidence for evolution? **3**
- 18) 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.

OR

- (a) With the help of a suitable example, explain oxidation and reduction in terms of gain or loss of oxygen.
(b) Identify the substances which are oxidised and the substances which are reduced in the following reaction:



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



- 20)** 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? **3**
- 21)** Karan's school organised a picnic at a wildlife sanctuary. The students noticed a streak of bright light through the canopy of the dense forest. Karan went near the canopy and saw that a few people were cutting trees. Karan informed his teacher who then contacted the police.
(a) What values were exhibited by Karan and his teacher?
(b) What is the phenomenon due to which bright light was seen through the canopy? Explain the phenomenon. **3**

Answer the following questions in about 70-100 words:

- 22)**
(a) Why are covalent compounds generally poor conductors of electricity?
(b) Name the gas evolved when ethanoic acid is added to sodium carbonate. How would you prove the presence of this gas?
(c) Write the structural formula of two isomers of n-pentane C_5H_{12} . **5**

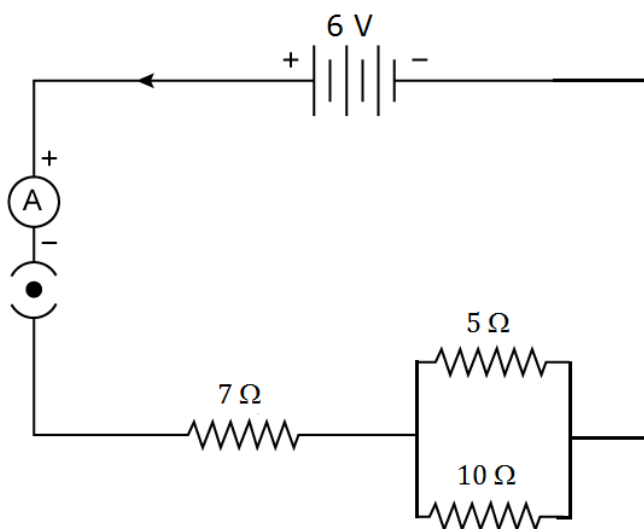
23)

5

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

OR

- Deduce the expression for the equivalent resistance of the parallel combination of three resistors R_1 , R_2 and R_3 .
- Consider the following electric circuit:



Calculate:

- Resultant resistance
- Total current
- Voltage across $7\text{-}\Omega$ resistor

- 24)** Draw a ray diagram for the following positions of the object placed in front of a convex lens:

- Between optical centre and principal focus (F)
- Between F and $2F$
- At $2F$

How will the nature and position of the image formed change in cases (i) and (ii) in part (a) if the convex lens is replaced with a concave lens? Draw the corresponding ray diagram.

- 25)** 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. **5**
- 26)** **5**
- (a) Draw a diagram showing the germination of pollen on the stigma. Label the style, male germ cell, ovule and female germ cell.
 - (b) What happens to the following parts of a flower after fertilisation—Ovule, Zygote, Ovary?