

**CLASS X (2019-20)**  
**SCIENCE (CODE 086)**  
**SAMPLE PAPER-8**

**Time : 3 Hours**

**Maximum Marks : 80**

**General Instructions :**

- (i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
  - (ii) All questions are compulsory.
  - (iii) Internal choice is given in each sections.
  - (iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
  - (v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
  - (vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
  - (vii) This question paper consists of a total of 30 questions.
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**SECTION A**

Q1. What is the minimum distance between an object and its real image in case of concave mirror?[1]

Q2. Name the two ways in which glucose is oxidised to provide energy in various organisms. [1]

Q3. **Answer question numbers 3.1-3.4 on the basis of your understanding of the following paragraph and the related studied concepts.**

A number of different energy sources are used every day. Where does this energy come from? Burning of fossil fuel is a main energy source. Sources other than this fossil fuel are known as alternative energy sources and there are several of them being used every day.

Windmills work in the same manner as a waterwheel. For many years, windmills were usually used mainly for milling grain, pumping water, or both. Today, though, all of that has changed. Windmills are used as wind turbines that can generate electricity. As the wind propels the blades, energy is created and stored to be used to perform work. As long as there is movement, energy can be produced, and the wind is an excellent alternative energy source. In many parts of the Midwest where there is an abundance of wind, energy is produced for homes and businesses.

The internal heat of the earth is another energy source. The interior of the earth is very hot as is evidenced by hot water or steam coming out of the ground in certain places on the Earth. The earth's internal heat is called geothermal energy. Geothermal energy can be used to heat homes and produce electricity. There are homes in Boise, Idaho that have been heated solely by hot springs since the 1890's. Also at the Geysers in California, steam drives turbines that generate electricity. This steam comes from underground water that is heated by geothermal energy.

Every day the sun provides energy. Solar energy is often thought to just be sunlight. Sunlight is full of energy. It is the sunlight that gives water the energy to evaporate and rise into the atmosphere. People are finding new ways to harness the power of sunlight. One major way is to trap or concentrate sunlight with the use of solar panels. This trapped sunlight can be used to heat homes and water. Also solar cells are devices that convert sunlight into electric energy.

**3.1** What are sources of energy other than fossil fuel called? [1]

**3.2** What is the earth's internal heat called? [1]

**3.3** Which device converts sunlight into electric energy? [1]

3.4 Which is the tool used to trap or concentrate sunlight to be used for energy? [1]

Q4. Question numbers 4.1-4.4 are based on two table given below. Study this table and answer the questions that follow:

Conductors	Substance	$\rho(\Omega - \text{m})$
<b>Metals:</b>	Silver	$1.47 \times 10^{-8}$
	Copper	$1.72 \times 10^{-8}$
	Gold	$2.44 \times 10^{-8}$
	Aluminium	$2.75 \times 10^{-8}$
	Tungsten	$5.25 \times 10^{-8}$
	Steel	$20 \times 10^{-8}$
	Lead	$22 \times 10^{-8}$
	Mercury	$95 \times 10^{-8}$
<b>Alloys:</b>	Manganin (Cu 84%, Mn 12%, Ni 4%)	$44 \times 10^{-8}$
	Constantan (Cu 60%, Ni 40%)	$49 \times 10^{-8}$
	Nichrome	$100 \times 10^{-8}$
	Pure carbon (graphite)	$3.5 \times 10^{-5}$
	Pure germanium	0.60
	Pure silicon	2300
<b>Insulators:</b>	Amber	$5 \times 10^{14}$
	Glass	$10^{10} - 10^{14}$
	Lucite	$> 10^{13}$
	Quartz (fused)	$10^{15} - 10^{16}$
	Sulphur	$10^{15}$
	Teflon	$> 10^{13}$
	Wood	$10^8 - 10^{11}$

4.1 Mention two reasons why tungsten is used for making filament of electric lamps. [1]

4.2 State the difference between a wire used in the element of electric heater and in fuse wire. [1]

4.3 Which among the following is a better conductor? [1]

- (i) Copper                      (ii) Glass  
(iii) Sulphur                      (iv) Aluminium

4.4 Which among the following is a better insulator? [1]

- (i) Teflon                      (ii) Wood  
(iii) Quartz                      (iv) Glass

Q5. Two conducting wires of same material with equal lengths and equal diameters are first connected in series and then parallel in an electric circuit. The ratio of heat produced in series and parallel combination would be : [1]

- (a) 1 : 2                                      (b) 2 : 1  
(c) 1 : 4                                      (d) 4 : 1

**OR**

A piece of wire of resistance R is cut into five equal parts. These parts are then connected in parallel. If the equivalent resistance of this combination is  $R'$ , then the ratio  $R/R'$  is [1]

- (a) 1/25 (b) 1/5  
(c) 5 (d) 25

- Q6. A student is asked to add a teaspoonful of solid sodium bicarbonate to a test tube containing approximately 3 ml of acetic acid. He observed that the solid sodium bicarbonate : [1]  
(a) floats on the surface of acetic acid  
(b) remains suspended in the acetic acid  
(c) settles down in the test tube  
(d) reacts with acetic acid and a clear solution is obtained
- Q7. Having observed and studied the prepared slides of Amoeba and yeast for asexual reproduction, students made following conclusions. The correct conclusion is: [1]  
(a) both reproduce by binary fission  
(b) both reproduce by budding  
(c) Amoeba reproduces by budding and yeast by binary fission  
(d) Amoeba reproduces by binary fission and yeast by budding
- Q8. A colourless and odourless gas is liberated when hydrochloric acid is added to a solution of washing soda. The name of the gas is [1]  
(a) carbon dioxide (b) nitrogen dioxide  
(c) sulphur dioxide (d) sulphur trioxide

**OR**

- Reddish brown deposit observed on iron nails, when these are kept in aqueous solution of  $\text{CuSO}_4$ , is that of [1]  
(a)  $\text{Cu}_2\text{O}$  (b)  $\text{CuO}$   
(c)  $\text{Cu}$  (d)  $\text{CuS}$
- Q9. The mature embryo of dicotyledonous seed has two cotyledons, the radical and the plumule. Which one of these tissue is not produced from the embryonic mass ? [1]  
(a) plumule (b) hypocotyl  
(c) root tip (d) cotyledons
- Q10. The image of a distant object is obtained on a screen by using a concave mirror. The focal length of the mirror can be determined by measuring the distance between : [1]  
(a) the object and the mirror  
(b) the object and the screen  
(c) the mirror and the screen  
(d) the mirror and the screen as well as that between the object and the screen
- Q11. When we observe the slide of epidermal leaf peel we find that the inner walls of guard cells in contact with the stomata pore are : [1]  
(a) very thick (b) moderately thick  
(c) moderately thin (d) thin
- Q12. Quick lime reacts with water to give [1]  
(a)  $\text{Ca}(\text{OH})_2$  (b)  $\text{CaCl}_2$   
(c)  $\text{CaOCl}_2$  (d)  $\text{CaO}$

**OR**

In the give reaction,



(a) 4 (b) 2

(c) 3 (d) 1

**(Q.no 13 to 14)** In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as.

(a) If assertion is true and reason is correct explanation of assertion.

(b) If assertion is true but reason is false.

(c) If assertion is false but reason is true.

(d) If both are false.

Q13. **Assertion :** Acids do not show acidic behaviour in the absence of water.

**Reason :** All acids in pure state are covalent compounds which do not contain  $\text{H}^+$  (aq.) ions. [1]

Q14. **Assertion :** Gold is not alloyed.

**Reason :** Pure gold has a high melting point and is very soft. Thus, the ornaments made from it do not keep their shape. [1]

**SECTION B**

Q15. Why are decomposition reactions called opposite of combination reactions? Write equations for these reactions. [3]

Q16. What is ethanol ? Draw the structure of ethanol molecule. How does ethanol behave with the following:

i. Sodium

ii. Excess of conc. sulphuric acid at 443 K ?

Write chemical equation for each reaction. [3]

**OR**

Three elements A, B and C have atomic number 7, 8 and 9 respectively.

i. What would be their positions in the Modern Periodic Table (Mention group and period both)?

ii. Arrange A, B and C in the decreasing order of their size.

iii. Which one of the three elements is most reactive and why ? [3]

Q17. What is 'Baking Powder' ? How does it make cakes soft and spongy ? [3]

Q18. State the role of following parts of human respiratory system (i) Nasal cavity (ii) Diaphragm (iii) Alveoli [3]

**OR**

List the functions of testosterone and estrogen. [3]

Q19. Acquired characters are not inherited. Justify, the statement with an example. The wings of bat and the wings of insects are considered analogous organs Why? [3]

Q20. How has the method of artificial selection by humans helped in the evolution of different vegetables ? Explain in brief giving an example. [3]

Q21. Design an activity to show that  $\text{CO}_2$  is produced during breathing. [3]

- Q22. A convex lens forms a real image 4 times magnified at a distance of 60 cm from the lens. Calculate the focal length and the power of the lens. [3]
- Q23. What is meant by scattering of light? Use this phenomenon to explain why the clear sky appears blue or the sun appears reddish at sunrise. [3]
- Q24. i. How does the resistance of the following change with the rise in temperature?  
 (a) Pure metals;  
 (b) German silver;  
 (c) Carbon.
- ii. Name three substances whose resistance changes very little with the rise in temperature. [3]

**OR**

- i. Explain why a conductor offers resistance to the flow of current.
- ii. Differentiate between conductor, resistor and resistance. [3]

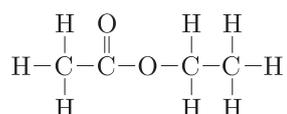
### SECTION C

- Q25. State the reactions, if any of the following metals react with lead nitrate solution. In case the reaction takes place, support it by a chemical equation.
- i. Silver,  
 ii. Zinc,  
 iii. Copper, and  
 iv. Iron. [5]

**OR**

State the reason why ?

- i. carbon is not used to reduce the oxides of sodium or aluminium.  
 ii. an iron strip is dipped in a blue copper sulphate solution turns the blue solution pale green.  
 iii. metals replace hydrogen from acids whereas non-metals do not.  
 iv. calcium does not occur free in nature.  
 v. zinc is used in the galvanisation of iron and not the copper. [5]
- Q26. i. The structural formula of an ester is :



Write the structural formulae of the corresponding alcohol and the acid.

- ii. (a) Mention the experimental conditions involved in obtaining ethne from ethanol.  
 (b) Write the chemical equation for the above reaction.
- iii. Explain the cleansing action of soap. [5]
- Q27. i. Differentiate between germination and fertilisation.  
 ii. State in brief the functions of the following parts of the human male reproductive system:  
 (a) Scrotum (b) Testes (c) Vas deferens [5]
- Q28. The sexual act always has the potential to result in pregnancy'. What approach would you use to prevent pregnancies? [5]

**OR**

What would result if fertilisation takes place in humans? Also, incorporate the post-fertilisation

changes. [5]

**OR**

What would result if fertilisation takes place in humans? Also, incorporate the post-fertilisation changes. [5]

Q29. Draw a ray diagram in each of the following cases to show the formation of image, when the object is placed :

- i. between optical centre and principal focus of a convex lens
- ii. between F and 2F of a concave lens
- iii. At 2F of a convex lens

What can you say about sign and value of linear magnification ratio in, (a) and (b) above. [5]

Q30. What is meant by resistance of a conductor? Name and define its SI unit. List the factors on which the resistance of a conductor depends. How is the resistance of a wire affected if:

- i. its length is doubled,
- ii. its radius is doubled ? [5]

**OR**

- i. Draw a neat diagram of a fuse wire connected in a fuse socket and label it.
- ii. State two properties of the material of the fuse wire.
- iii. Why is a fuse wire, always placed in a live wire ? [5]

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