

**CLASS X (2019-20)**  
**SCIENCE (CODE 086)**  
**SAMPLE PAPER-10**

**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. Name the plant hormones responsible for elongation of cells. [1]
- Q2. What are the two factors on which the lateral displacement of an emergent ray from a glass slab depends ? [1]
- Q3. **Answer question numbers 3.1-3.4 on the basis of your understanding of the following paragraph and the related studied concepts.**  
Operating on the same principle as wind turbines, the power in sea turbines comes from tidal currents, which turn blades similar to ships' propellers, but, unlike wind, the tides are predictable and the power input is constant. The technology raises the prospect of many countries becoming self-sufficient in renewable energy and drastically reducing its carbon dioxide emissions. If tide, wind and wave power are all developed, Britain would be able to close gas, coal and nuclear power plants and export renewable power to other parts of Europe. Unlike wind power, which Britain originally developed and then abandoned for 20 years allowing the Dutch to make it a major industry, undersea turbines could become a big export earner to island nations such as Japan and New Zealand.
- 3.1** On what principle do the sea turbines operate? [1]
- 3.2** What is the advantage of sea turbines over wind turbines? [1]
- 3.3** If tide, wind and wave power are used by Britain which other energy sources are likely to be closed by it? [1]
- 3.4** For which countries sea turbines can become a good source of energy? [1]
- Q4. **Question numbers 4.1-4.4 are based on the two tables given below. Study this table and answer the questions that follow :**  
More than a million Americans die of cardiac diseases each year. One of the major causes is high cholesterol levels in the blood. The National Cholesterol Education Program suggests that total blood cholesterol level should be :

<b>Blood Cholesterol Level Chart</b>			
	<b>Desirable</b>	<b>Borderline (high)</b>	<b>High Risk</b>
Total Cholesterol	< 200	200-240	> 240
Triglycerides	< 150	150-500	> 500
Low Density Cholesterol	< 130	130-160	> 160
High Density Cholesterol	> 50	50-35	< 35

Given below are blood report of two persons

	<b>Total Cholesterol</b>	<b>Triglycerides</b>		
Patient A	356	180		
Patient B	180	100		

**4.1** Which of the organ can be affected in a patient A? Can you infer the same risk factor for patient B? [1]

**4.2** What information is left out for the blank columns? [1]

**4.3** A person with high risk category have to be suggested a suitable diet ? Which of the following are correct guidelines for the patient [1]

- (a) High sugar and starch                      (b) Low salt and fats  
(c) High proteins                                  (d) Low sugar and proteins

**4.4** Apart from following a prescribed diet, some other changes should be brought in the lifestyle to avoid aggravation of symptoms in a patient who is already suffering from high blood cholesterol-

- A. Yoga and exercise  
B. Quitting smoking and alcohol  
C. Walking and doing small chores on your own  
D. Enjoying loud music

Which of the following is the correct option [1]

- (a) A, C    (b) B, C, D  
(c) A, B, C                                        (d) A, D

**Q5.** The blue colour of aqueous copper sulphate solution can be changed to pale green by immersing which of the following metal rod in it ? [1]

- (a) Iron    (b) Zinc  
(c) Aluminium                                    (d) Silver

**OR**

When zinc rod is placed in copper sulphate solution, the blue colour of the solution starts fading. From this observation a student concluded that the fading of colour is due to : [1]

- (a) oxidation of zinc                              (b) reduction of copper ions  
(c) reduction of sulphate ions                (d) oxidation of sulphate ions

**Q6.** Saurabh has to perform the experiment of finding the focal length of a concave mirror by using a distant object. Which of the following 'set ups' will he choose apart from the mirror and screen provided ? [1]

- (a) A mirror holder, and a scale  
(b) A mirror holder, a screen holder and a scale  
(c) A screen holder and a scale  
(d) A mirror holder and a screen holder

- Q7. A teacher asks Rani to obtain a sharp image of distant object on the screen by choosing appropriate devices out of the following : [1]
- concave mirror
  - convex lens
  - concave lens
- She can successfully obtain image by using :
- a concave mirror only
  - a convex lens only
  - both either by concave mirror or by convex lens
  - convex lens only

- Q8. Two prepared slides showing stages of reproduction in (i) Amoeba and (ii) yeast were observed by four students P, Q, R and S. The observations as reported by the four students are as follows : [1]
- P : Cytokinesis was seen in the yeast cell.  
Q : In Amoeba, elongated nucleus was dividing to form two daughter nuclei.  
R : A chain of buds was seen due to reproduction in Amoeba.  
S : Single cells of Amoeba and yeast were undergoing binary fission and budding respectively.  
The correct observations are :
- P, Q and S
  - P and R only
  - R only
  - Q and S only

**OR**

- The structure of seed which is also known as plumule is : [1]
- embryonic shoot
  - embryonic root
  - both of these
  - none of these

- Q9. A student on adding (i) Na metal (ii)  $\text{Na}_2\text{CO}_3$  and (iii)  $\text{NaHCO}_3$  solution in acetic acid in test tubes A, B, C would observe that the gas evolved in the three test tubes respectively are : [1]
- $\text{H}_2, \text{CO}_2, \text{CO}_2$
  - $\text{CO}_2, \text{H}_2, \text{CO}_2$
  - $\text{CO}_2, \text{CO}_2, \text{H}_2$
  - $\text{CO}_2, \text{CO}, \text{H}_2$

- Q10. A cylindrical conductor of length  $l$  and uniform area of cross-section  $A$  has resistance  $R$ . Another conductor of length  $2l$  and resistance  $R$  of the same material has area of cross section [1]
- $A/2$
  - $3A/2$
  - $2A$
  - $3A$

- Q11. The stomatal apparatus comprises : [1]
- guard cells
  - stomata and guard cells
  - stomata, guard cells and accessory cells
  - guard cells and chloroplast

- Q12. Which of the following set of elements is written in order of their increasing metallic character? [1]
- Be Mg Ca
  - Na Li K
  - Mg Al Si
  - C O N

**OR**

- In Mendeleev's Periodic Table, gaps were left for the elements to be discovered later. Which of the following elements found a piece in the periodic table later?
- Germanium
  - Chlorine
  - Oxygen
  - Silicon

(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 :** Oil and fat containing food items are flushed with nitrogen.

**Reason :** The food is surrounded by an atmosphere of nitrogen then rancidity stops as no oxygen comes in contact with the food. [1]

Q14. **Assertion :** Electrolysis of an aqueous solution of sodium chloride is called chlor-alkali process.

**Reason :** After electrolysis of an aqueous solution of sodium chloride, the products formed are chlor for chlorine and alkali for sodium hydroxide. [1]

### SECTION B

Q15. Write balanced chemical equations for the following and identify the type of reaction in each case. [3]

- Potassium bromide (aq) + Barium iodide(aq)  $\longrightarrow$  Potassium iodide (aq) + Barium bromide (s).
- Zinc carbonate (s)  $\longrightarrow$  Zinc oxide (s) + Carbon dioxide (g)
- Hydrogen (g) + Chlorine (g)  $\longrightarrow$  Hydrogen chloride (g)

Q16. What is the importance of pH to aquatic life ? [3]

**OR**

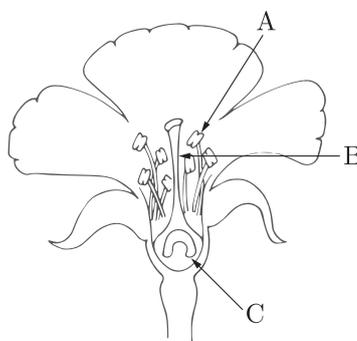
A carboxylic acid  $C_2H_4O_2$  reacts with an alcohol in the presence of  $H_2SO_4$  to form a compound 'X'. The alcohol on oxidation with alkaline  $KMnO_4$  followed by acidification gives the same carboxylic acid,  $C_2H_4O_2$ . Write the name and structure of (i) carboxylic acid, (ii) alcohol and (iii) the compound X. [3]

Q17. What is the formula of washing soda crystals ? What happens when washing soda crystals are exposed to air ? Write a chemical equation in support of your answer [3]

- What is the difference between self pollination and cross pollination?
- What happens to the pollen which falls on a suitable stigma? Explain. [3]

**OR**

Name the parts A, B and C shown in the given diagram and state one function of each part.



Q19. Name the hormone synthesized at the shoot tips. How does it help the plant to respond to light? [3]

Q20. What is (i) phototropism and (ii) geotropism ? With a labelled diagram describe and show that light and gravity change the direction in which plant parts grow. [3]

- Q21. Leaves of a healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer. [3]
- Q22. i. Nichrome wire of length  $L$  and radius  $R$  has resistance of  $10\ \Omega$ . How would the resistance of the wire change when :  
(a) Only length of the wire is doubled ?  
(b) Only diameter of the wire is doubled ? Justify your answer.  
ii. Why element of electrical heating devices are made-up of alloys ? [3]
- Q23. i. Why are conductors of electric heating devices, such as toasters and electric iron made of an alloy, rather than pure metals ?  
ii. Why is an ammeter likely to burn, if connected in parallel ? [3]
- Q24. i. Define dispersion of light.  
ii. Draw a ray diagram to show the path of a light ray that enters the glass prism obliquely. Label on it the angle of incidence and angle of deviation. [3]

**OR**

The near point of a person suffering from hypermetropia is 75 cm. Calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm from the eye. [3]

### SECTION C

- Q25. i. Distinguish between ionic and covalent compounds under the following properties  
(a) Strength of forces between constituent elements.  
(b) Solubility of compounds in water  
(c) Electrical conduction in substances.  
ii. Explain how the following metals are obtained from their compounds by the reduction process:  
(a) Metal M which is in the middle of the reactivity series.  
(b) Metal N which is high up in the reactivity series.  
Give one example of each type. [5]

**OR**

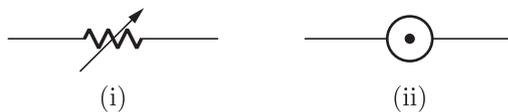
Explain the given reactions with examples :

- i. (a) Oxidation reaction  
(b) Substitution reaction  
(c) Addition reaction  
ii. What is glacial acetic acid ? Why is it named so ? State its two uses. [5]
- Q26. 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]
- Q27. What is the significance of photosynthesis ? [5]
- Q28. Set up an experiment to show that carbon dioxide is necessary for photosynthesis. [5]

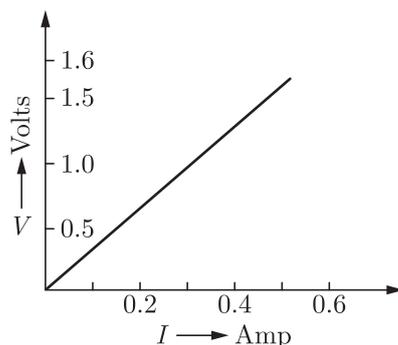
**OR**

Explain the process of gaseous exchange in human beings.

- Q29. i. What do the following symbols mean in the circuit diagrams ?



- ii. An electric circuit consisting of 0.5 m long nichrome wire XY an ammeter, a voltmeter, four cells of 1.5 V each and plug key were set-up.



- (a) Draw the diagram of this electric circuit to study the relation between potential difference maintained between the points X and Y and electric current flowing through XY.
- (b) The graph shown is plotted between  $V$  and  $I$  values. What would be the values of  $\frac{V}{I}$  ratio, when potential difference is 0.8 V, 1.2 V and 1.6 V. What conclusion you draw from these values ? [5]

- Q30. i. Define real image of an object.
- ii. Name the mirror that
- can give real as well as virtual image of an object.
  - will always give virtual image of same size of an object.
  - will always give virtual and diminished image of an object.
  - is used by a doctor in examining teeth.
- iii. With the help of a ray diagram explain the use of concave mirror as solar concentrators. [5]

**OR**

- i. Define Principal focus of a spherical mirror
- ii. For what position of the object does a concave mirror form a real, inverted and diminished image of the object? Draw the ray diagram.
- iii. An object 4 cm high is placed at a distance of 6 cm in front of a concave mirror of focal length 12.0 cm. Find the position of the image formed. [5]

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