

CLASS X (2020-21)
SCIENCE (CODE 086)
SAMPLE PAPER-2

Time : 3 Hours

Maximum Marks : 80

General Instructions :

- (i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
 - (ii) Section–A – question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.
 - (iii) Section–B – question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.
 - (iv) Section–C – question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should in the range of 50 to 80 words.
 - (v) Section–D – question no. 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
 - (vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
 - (vii) Wherever necessary, neat and properly labeled diagrams should be drawn.
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SECTION A

Q1. The pH of a sample of vegetable soup was found to be 6.5. How is this soup likely to taste? [1]

OR

Why oxides of highly reactive metals cannot be reduced by carbon?

Q2. What is an alkali? [1]

Q3. Write two reasons responsible for the late discovery of noble gases. [1]

Q4. Why sky appears dark to the passengers flying at high altitudes? [1]

Q5. Explain why we see the sign DANGER front of the some vehicles. [1]

Q6. Name a mirror that can give an erect and enlarged image of an object. [1]

OR

Light enters from air to glass having refractive index 1.50. What is the speed of light in glass?
Speed of light in air is 3×10^8 m/s.

Q7. If field lines of a magnetic field are crossed at a point, what does it indicate? [1]

Q8. What type of core is used to make an electromagnet? [1]

Q9. Power of a lamp is 60 W. Find the energy in joules consumed by it in 1 s. [1]

OR

Why do we use copper and aluminium wire for transmission of electric current?

Q10. Write the role of motor areas in brain. [1]

Q11. Why is respiration considered an exothermic process? [1]

OR

What role do digestive enzymes play in the alimentary canal?

Q12. How can the chromosomes be identified? [1]

OR

A normal baby girl receives her X chromosome from whom : mother, father, both mother and father or either from mother or father?

Q13. How is spinal cord protected? [1]

For question numbers 14, 15 and 16, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

- (a) Both A and R are true and R is correct explanation of the assertion.
- (b) Both A and R are true but R is not the correct explanation of the assertion.
- (c) A is true but R is false.
- (d) A is false but R is true.

Q14. **Assertion :** Magnesium ribbon should be cleaned before burning in air.
Reason : Magnesium ribbon is coated with a thin layer of dust containing moisture. [1]

Q15. **Assertion :** Food cans are coated with tin and not with zinc.
Reason : Zinc is more reactive than tin. [1]

OR

Assertion : Platinum, gold and silver are used to make jewellery.

Reason : Platinum, gold and silver are least reactive metals.

Q16. **Assertion :** A network of food chains existing together in an ecosystem is known as food web.
Reason : An animal like kite cannot be a part of a food web. [1]

Q17. **Read the following and answer any four question from (17.1) to (17.5) :** 1 × 4

Metal	Iron (II) Sulphate	Copper (II) Sulphate	Zinc Sulphate	Silver Nitrate
A	No reaction	Displacement	---	---
B	Displacement	---	No reaction	---
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

17.1 The most active metal is

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

17.2 The least reactive metal is

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

17.3 The increasing order of reactivity of metal A, B, C and D is

- (a) $A < B < C < D$
- (b) $D < C < B < A$
- (c) $D < A < C < B$
- (d) $D < C < A < B$

17.4 Container of which metal can be used to store both zinc sulphate solution and silver nitrate solution?

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

17.5 The metal which shows the displacement with iron (II) sulphate.

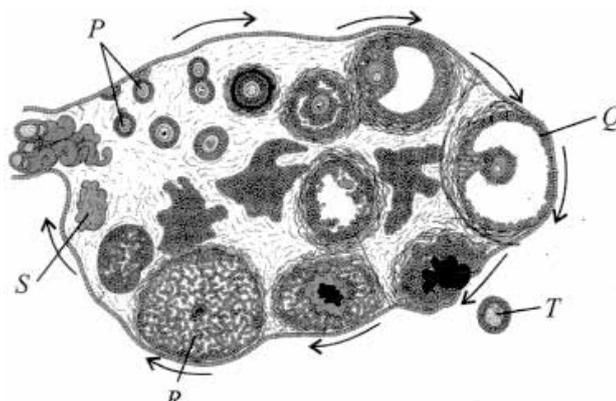
- (a) A
- (b) C
- (c) D
- (d) B

Q18. **Read the following and answer any four question from (18.1) to (18.5) :** 1 × 4

The ovary is a ductless reproductive gland in which the female reproductive cells are produced. Females have a pair of ovaries, held by a membrane beside the uterus on each side of the lower abdomen. The ovary is needed in reproduction since it is responsible for producing the female reproductive cells, or ova.

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During ovulation, a follicle (a small cavity in the ovary) expels an egg under the stimulation of gonadotropic hormones released by the pituitary gland, the luteinizing hormone and the follicle-stimulating hormone. The rest of the follicle, or the corpus luteum, secretes the sex hormones estrogen and progesterone, which regulate menstruation and control the development of the sex organs. The sex hormones and the gonadotropic hormones interact with each other to control the menstrual cycle



18.1 Which of the following statements is correct regarding the labelled structures?

- (a) Before puberty, only structure T undergoes meiosis.
- (b) The hormone produced by structure R stimulates the pituitary gland to secrete luteinizing hormone.
- (c) The hormone produced by structure S is responsible for the development of female secondary sexual characters.
- (d) The hormone produced by P and Q stimulates the proliferation of the endometrial lining of the uterine wall.

- 18.2** The formation of T begins in female
 (a) at birth (b) before birth
 (c) after puberty (d) none of these
- 18.3** The term used for release of T is?
 (a) Ovulation (b) Proliferation
 (c) Fragmentation (d) Fission
- 18.4** Which the hormone secreted by R is?
 (a) Progesterone (b) Triiodothyronine
 (c) Thyroxine (d) Cortisol
- 18.5** The name of part R is
 (a) Ovum (b) Oviduct
 (c) Corpus luteum (d) Medulla

Q19. Read the following and answer any four question from (19.1) to (19.5) :

1 × 4

Convex mirror is used as a rear view mirror in vehicles. Since the image of the object formed is small in size, the field of view is increased. Convex mirror is also used in street lights to diverge light over a large area.



- 19.1** The nature of image in driver's mirror is-
 (a) Erect and diminished (b) Virtual and undiminished
 (c) Erect and magnified (d) Virtual and magnified
- 19.2** A person standing in front of a mirror finds his image thinner but with normal height. This implies that the mirror is
 (a) convex and cylindrical with axis vertical
 (b) convex and cylindrical with axis horizontal
 (c) convex and spherical
 (d) concave and spherical
- 19.3** A convex mirror is used to form the image of an object. Then which of the following statement is wrong.
 (a) The image lies between the pole and the focus.
 (b) The image is diminished in size.
 (c) The image is erect.
 (d) The image is real.
- 19.4** The field of view of convex mirror is as compared to plane mirror.
 (a) large (b) small
 (c) equal (d) none of these

19.5 $f = \frac{R}{2}$ is valid

- (a) for convex mirrors but not for concave mirrors
- (b) for concave mirrors but not for convex mirrors
- (c) for both convex and concave mirrors
- (d) neither for convex mirrors not for concave mirrors.

Q20. The following table given below shows the resistivity of three materials X, Y and Z. Analyse the table and answer the following questions : 1 × 4

Samples	X	Y	Z
Resistivity	3×10^{-9}	11.1×10^{-6}	18×10^{-17}

20.1 The increasing order of conductivity of samples is

- (a) $Y < X < Z$
- (b) $X < Y < Z$
- (c) $Z < X < Y$
- (d) $Z < Y < X$

20.2 The best conductor is

- (a) X
- (b) Y
- (c) Z
- (d) X and Y

20.3 Which of these is best insulator?

- (a) X
- (b) Y
- (c) Z
- (d) None of these

20.4 Electrical resistivity of a given metallic wire depends upon :

- (a) Its length
- (b) Its thickness
- (c) Its shape
- (d) Nature of the material

20.5 In the following material, which has the low resistivity-

- (a) Copper
- (b) Iron
- (c) Mercury
- (d) None & these

SECTION B

Q21. What is the importance of DNA copying in reproduction? Why is variation beneficial to the species but not necessary for the individual? Explain. [2]

OR

- a. "Recent fossils are found closer to the earth's surface". Comment on the statement stating reason.
- b. List two factors which could lead to the rise of new species.

Q22. Differentiate between auricles and ventricles. [2]

Q23. A compound Z is formed by transfer of electrons from the metal X to a non-metal Y, Identify the type of bond formed in the compound. List three properties of compound formed by such type of bonds. [2]

OR

Give reason for the following:

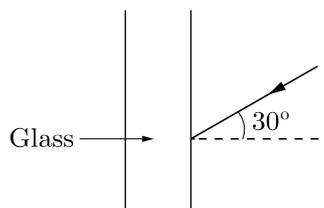
- a. School bells are made up of metals.
- b. Electrical wires are made up of copper.

Q24. In the following table, seven elements A, B, C, D, E, F and G (here letters are not the usual symbols of the elements) of the Modern Periodic Table with atomic numbers 3 to 18 are given: [2]

3	4	5	6	7	8	9	10
A					E		G
11	12	13	14	15	16	17	18
B	C		D			F	

- Which of these is (a) a noble gas, (b) a halogen?
- If B combines with F , what would be the formula of the compound formed?

Q25. Figure shows a ray of light meeting the glass of the window of a car at angle of incidence of 30° .



- Assuming that the refractive index of glass is 1.5, find the angle of refraction for this ray in the glass. (Given : $\sin(19.5^\circ) = 1/3$)
- Complete the diagram by sketching the path of the ray through the glass and out on the other side. [2]

Q26. A bulb is rated at 5.0 V, 100 mA. Calculate its (a) power and (b) resistance. [2]

SECTION C

Q27. How does control and coordination take place in plants? [3]

OR

Explain the process of break down of glucose in a cell (i) in the presence of oxygen (ii) in the absence of oxygen.

Q28.

- Write the chemical formula for washing soda.
- How may it be obtained from baking soda?
- Name an industrial use of washing soda other than washing clothes. [3]

Q29. What are plant hormones? Give its examples. [3]

Q30. Name the hormones secreted by the following endocrine glands and specify one function of each:
 (a) Thyroid
 (b) Pituitary
 (c) Pancreas [3]

Q31. Write an equation each for decomposition reactions, where energy is supplied in the form of heat, light or electricity. [3]

Q32. Out of the elements $H(1)$, $Be(4)$, $Na(11)$ and $Mg(12)$.

- Write the pair of elements having similar chemical properties.
- State the group number of each pair,
- Name one another element belonging to each of these groups. [3]

- Q33. i. Name and define SI unit of resistance.
 ii. Calculate the resistance of a resistor if the current flowing through it is 200 mA, when the applied potential difference is 0.8 V. [3]

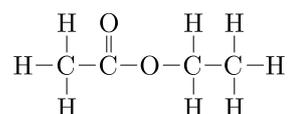
SECTION D

- Q34. A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved. [5]

OR

Answer the following:

- 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 ethene from ethanol.
 (b) Write the chemical equation for the above reaction.
 iii. Explain the cleansing action of soap.

- Q35. Answer the following: [5]
- How is zygote formed?
 - State the function of placenta in the mother's body.
 - At what interval the egg is formed in human female ovary?
 - Name two STDs caused by bacterial infection.
 - Why is prenatal sex determination prohibited?

- Q36. It is desired to obtain an erect image of an object, using concave mirror of focal length of 12 cm.
- What should be the range of distance of an object placed in front of the mirror?
 - Will the image be smaller or larger than the object. Draw ray diagram to show the formation of image in this case.
 - Where will the image of this object be formed, if it is placed 24 cm in front of the mirror? Draw ray diagram for this situation also to justify your answer.
- Show the positions of pole, principal focus and the centre of curvature in the above ray diagrams. [5]

OR

- Define real image of an object.
- 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.
- With the help of a ray diagram explain the use of concave mirror as solar concentrators.