

**Model Question Paper**  
**Class-X**  
**Science & Technology**  
**(2024-2025)**

**Time 3Hr.**

**MM : 60**

**General Instructions:**

- (i) All questions are compulsory
- (ii) Section-A: Question number 1 to 16 are objective type questions of one mark each.
- (iii) Section-B: Question number 16 to 24 are of very short answer type questions and each question is of 2 marks.
- (iv) Section-C: Question number 25 to 28 are short answer type questions and each question is of 3 marks.
- (v) Section-D: Question no 29-31 are very long answer type question. All questions are compulsory and of 5 marks each.
- (vi) Draw labelled diagram in support of your answer wherever necessary.

**Section –A**

Q1 A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which of the following option gives the chemical equation of the reaction? (1)

- (a)  $\text{Al} + \text{Cl}_2 \rightarrow \text{AlCl}_2$
- (b)  $2\text{Al} + \text{Cl}_2 \rightarrow 2\text{AlCl}$
- (c)  $2\text{Al} + 3\text{Cl}_2 \rightarrow 2\text{AlCl}_3$
- (d)  $3\text{Al} + 3\text{Cl}_2 \rightarrow 3\text{AlCl}_3$

Q.2 Lactic Acid is present in (1)

- (A) Orange.                      B (B) Tea
- (C) Curd.                         D) Vinegar

Q.3 A non-metal used to preserve food material is: (1)

- a) Carbon.                      b) Phosphorus
- c) Sulphur.                      d) Nitrogen

Q.4) A carbon compound contains two atoms of carbon. Which name should the carbon compound bear? (1)

- (a) Butane.                      (b) Ethane
- (c) Methane                      d) Propane

Q.5 Which statement is true for the reflection of light? (1)

- (a) The angle of incidence and reflection are equal.
- (b) The reflected light is less bright than the incident light.
- (c) The sum of the angle of incidence and reflection is always greater than  $90^\circ$ .
- (d) The beams of the incident light, after reflection, diverge at unequal angles.

Q.6 In which part of the human eye is the image of an object formed? (1)

- (a) Iris                              (b) Pupil
- (c) Retina                         (d) Cornea

Q.7 Electrical resistivity of a given metallic wire depends upon (1)  
(a) Its length (b) Its thickness  
(c) Its shape (d) Nature of the material

Q.8 An electric bulb is rated 220 V and 100 W. When it is operated on 110 V. the power consumed will be - (1)

- (a) 100 W (b) 75 W  
(c) 50 W (d) 25 W

Q.9 In amoeba, food is digested in the: (1)

- (a) Food vacuole (b) Mitochondria  
(c) Pseudopodia (d) Chloroplast

Q.10 The gap between two neurons is called a (1)

- (a) dendrite. (b) synapse.  
(c) axon. (d) impulse.

Q.11 The anther contains (1)

- (a) sepals. (b) ovules.  
(c) pistil. (d) pollen grains

Q.12 The amount of energy that flows from one trophic level to another in a food chain is (1)

- a) 5% b) 10%  
c) 20% d) 15%

Question 13 to 15 consist of two statement assertion-A and reason -R answer these questions selecting the appropriate option given in below

- a) both A and R are true and R is correct explanation of A  
b) both A and R are true and R is not the correct explanation of A  
c) A is true but R is false  
d) A is false but R is true

Q.13 Assertion: Rusting of iron is endothermic in nature (1)

Reason : As the reaction is slow the release of heat is barely event.

Q.14 Assertion: A compass needle is placed near a current carrying wire the deflection of the compass needle decreases when the magnitude of the current in the wire is increased (1)

Reason : The strength of magnetic field at a point near the conductor increases on increasing the current.

Q.15 Assertion: The use of chemical like CFCs has endangered the ozone layer

Reason: Since the ozone layer protect against the ultraviolet radiation from the sun, this could damage the environment. (1)

### Section B

Q.16. Why should a magnesium ribbon be cleaned before burning in air? (2)

Q.17 While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid? (2)

Q.18 A mixture of oxygen and ethyne is used for welding. Can you tell why a mixture of ethyne and air is not used? (2)

Q.19 Why do we prefer a convex mirror is used as rear view mirror in vehicles? (2)

Q.20 Light enters from air to glass having refractive index 1.50. What is the speed of light in the glass? The Speed of light in vacuum is  $3 \times 10^8$  ms<sup>-1</sup>. (2)

Q.21 Why is normal eye not able to see clearly the objects placed closer than 25 cm? (2)

Q.22 Why is diffusion insufficient to meet the oxygen requirements of multicellular organisms like humans? (2)

Q.23 How is the movement of leaves of the sensitive plant different from the movement of shoot towards light? (2)

Q.24 What is the purpose of making urine in the human body? Name the organ that stores and release the urine? (2)

OR

Which hormone is present in the areas of rapid cell division in a plant and which hormone inhibits growth? (2)

### Section-C

Q.25 The refractive indices of three media are given below: (1+2=3)

| Medium | Refractive index |
|--------|------------------|
| A      | 1.6              |
| B      | 1.8              |
| C      | 1.5              |

A ray of light is travelling from A to B and another ray is travelling from B to C.

(a) In which of the two cases the refracted ray bends towards the normal?

(b) In which case does the speed of light increase in the second medium?

Also give reasons for your answer.

OR

Why is tungsten used almost exclusively for filament of electric lamps? (3)

Q.26 A solution of a substance X is used for whitewashing. (1+2=3)

(a) Name the substance X and write its formula?

(b) Write the reaction of the substance 'X' named in (a) above with water.

OR

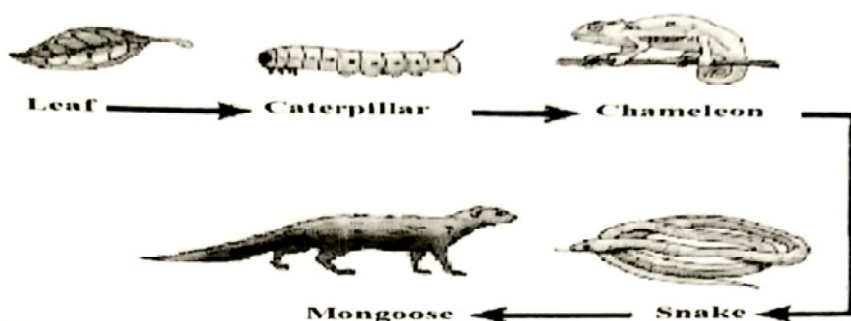
What are two properties of Carbon which lead to the large number of carbon compounds we see around us? (3)

Q.27 The sex of new born child is a matter of chance and none of the parents may be considered responsible for it. Justify this statement with the help of flow chart showing sex determination in human beings. (3)

OR

Differentiate between external- fertilization and internal fertilization. (3)

Q.28 Study the food chain given below and answer the questions that follow: (1+2=3)



(a) If the amount of energy available at the third trophic level is 100 Joules, then how much energy will be available at producer level? Justify your answer.

(b) Is it possible to have 2 more trophic levels in this food chain just before the Fourth trophic level? Justify your answer.

#### Section-D

Q.29 What is corrosion? What are essential conditions for corrosion? Write different methods to prevent corrosion. (5)

OR

Define the following terms.

(a) Mineral. (b) Ore (c) Gangue

(d) Rancidity. (e) Precipitate. (1+1+1+1+1=5)

Q.30 A concave lens has focal length of 15 cm. At what distance should the object from the lens be placed so that it forms an image at 10 cm from the lens? Also, find the magnification produced by the lens. (5)

OR

a) Draw magnetic field lines around a bar magnet.

b) Why don't two magnetic field lines intersect each other? (2+3)

Q.31 Explain the process of excretion in human beings with well labelled diagram. (5)

OR

- a) A Doctor has advised Sameer to reduce sugar intake in his diet and do regular exercise after checking his blood test report which disease do you think Sameer is suffering from? Name the hormone responsible for this disease and the organ producing the hormone ? (3)
- b) Which hormone is present in the areas of rapid cell division in a plant and which hormone inhibits the growth? (2)

### Level of Difficulty

| Level    | MCP | V.Short | Short | Long | Remarks |
|----------|-----|---------|-------|------|---------|
| Easy     | 07  | 03      | 02    | 01   | 41.93%  |
| Moderate | 04  | 03      | 01    | 01   | 29.03%  |
| Hot      | 04  | 03      | 01    | 01   | 29.03%  |

### Division of Marks

| Sr. No. | Type of Questions | Marks allotted | No. Of Questions | Total Marks |
|---------|-------------------|----------------|------------------|-------------|
| 1       | Objective type    | 1              | 15               | 15          |
| 2       | Very Short Answer | 2              | 9                | 18          |
| 3       | Short Answer      | 3              | 4                | 12          |
| 4       | Long Answer       | 5              | 3                | 15          |
|         | Total             | -              | 31               | 60          |

### Distribution

| Unit No. | Unit                                      | Chapters Covered   | Marks |
|----------|---|--|-------|
| I        | Chemical Substances Nature and behaviour. | Chapter- 1: Chemical reaction and equations.<br>Chapter-2: Acids, Bases and Salts<br>Chapter-3: Metals and Non-Metals<br>Chapter-4: Carbon and its compounds.                      | 19    |
| II       | Work of living                            | Chapter- 5: Life processes<br>Chapter-6: Control and coordination<br>Chapter-7: How to organisms reproduce?<br>Chapter-8: Heredity.  | 19    |
| III      | Natural Phenomena and effects of current  | Chapter- 9: Light-Reflection and refraction.<br>Chapter-10: The human eye and the colourful world.<br>Chapter-11: Electricity<br>Chapter-12: Magnetic effects of electric current. | 18    |
| IV       | Natural Resources                         | Chapter-13: Our Environment  | 4     |
|          |   | Total Marks  | 60    |

Unit-I Chemical Substances, Nature and behaviour.

| Questions                       | Marks    |
|---------------------------------|----------|
| 5 Questions (MCQ)               | 5 Marks  |
| 3 Questions (Very short answer) | 6 Marks  |
| 1 Question (Short answer)       | 3 Marks  |
| 1 Question (long answer)        | 5 Marks  |
| 10 Questions                    | 19 Marks |

Chapter-1 chemical reactions and equation:-

Chemical equations, balanced chemical equation, types of chemical equations- combination. Decomposition, displacement double displacement, precipitation, endothermic, exothermic and redox(oxidation-reduction) reactions. Effect of oxidation and reduction reactions in everyday life- corrosion and rancidity.

Chapter-2: Acid, bases and salts:-

Chemical properties of acids and bases, concept of pH scale, Importance of pH in everyday life, Chemicals from common salt, Preparation and uses of Sodium Hydroxide, Bleaching powder, Baking soda, Washing soda and plaster of paris. Concept of water of crystallisation.

Chapter-3: Metals and Non-Metals :-

Physical and chemical properties of metals and Non-Metals. Reactivity series. Formation and properties of ionic compounds, Basic metallurgical process, corrosion and its prevention.

Chapter-4: Carbon- compounds:-

Covalent bonding, Versatile nature of carbon, Saturated and Unsaturated.

Carbon compounds, Nomenclature of carbon compounds, Chemical properties of carbon compounds, Ethanol and Ethanoic acid (properties and uses), Soaps and detergents, Cleaning action of soaps(Micelles formation).

Unit-II: World of Living.

| Questions                       | Marks    |
|---------------------------------|----------|
| 5 Questions(MCQ)                | 05 Marks |
| 3 Questions(Very short answers) | 06 Marks |
| 1 Question (Short answer)       | 03 Marks |
| 1 Question (Long answer)        | 05 Marks |
| 10 Questions                    | 19 Marks |

- Chapter-5: Life processes:-  
Living being. Basic concept of Nutrition. Respiration, Transportation and excretion in Human-beings and Plants.
- Chapter-6: Control and Coordination:-  
Animal's nervous system, Reflex action, Human Brain, Coordination in plants, Tropic movements in plants, Plant hormones, Hormones in animals.
- Chapter-7: How do organisms Reproduce? :-  
Different modes of reproduction in plants and animals, Importance of sexual-reproduction, Sexual Reproduction in plants, Reproduction in Human beings, Reproductive Health, Different methods of family planning.
- Chapter-8: Heredity :-  
Accumulation of variation during reproduction, Heredity, Mendel's contributions rules for inheritance of traits. How do the traits get expressed? Sex determination.
- Unit-III : Natural Phenomena and effects of current [18 Marks]

| Questions                       | Marks    |
|---------------------------------|----------|
| 4 Questions (MCQ)               | 4 Marks  |
| 3 Questions (Very short answer) | 6 Marks  |
| 1 Question (Short answer)       | 3 Marks  |
| 1 Question (Long answer)        | 5 Marks  |
| 9 Questions                     | 18 Marks |

- Chapter-9: Light-Reflection and refraction:-  
Reflection of light spherical mirrors:- concave and convex, Representation of images formed by mirrors using ray diagrams mirror formula and magnification, refraction of light through glass slab and lenses, Image formation by lenses, Lens formula and magnification, uses of mirrors and lenses power of lens.
- Chapter-10: The Human Eye and the colourful world :-  
The human Eye, Power of accommodation, defects of vision and their correction, Refraction of light through prism, Dispersion of light, atmosphere Refraction ,Scattering of light.
- Chapter-11: Electricity:-  
Electric current, electric potential and potential difference, Circuit diagram, Ohm's law, Factors on which the resistance of a conductor depends, Series combination of resistors. Parallel combination of resistors, Heating effects of electric current and its practical applications, Electric Power.
- Chapter -12: Magnetic effect of electric current: -  
Magnetic field and field lines, Magnetic field due to a current carrying conductor right hand thumb rule, Magnetic field due to a current carrying conductor in a magnetic field, Fleming's left hand rule, Domestic Electric circuits.



Unit IV : natural Resources

[4 Marks]

| Questions                | Marks    |
|--------------------------|----------|
| 1 Question(MCQ)          | 1 Mark   |
| 1 Question(Short Answer) | 3 Marks  |
| 2 Questions              | 04 Marks |

Chapter-13: Our Environment:-

Eco-System, Food Chains and webs, Ozone layer and its depletion, Managing the garbage we produce, Biodegradable and non-biodegradable substances.