Model Question Paper for Class X
Science Theory

Time: 3 hours Max. Marks: 80

General Instructions:

a) *The question paper has four sections A, B, C and D. There are 36 questions in the question paper and all questions are compulsory.*
b) *Section-A (Q.1 to Q.20)- all questions and parts thereof are of one mark each. These questions contain multiple choice questions, very short answer questions and assertion – reason type questions. Answer to these should be given in one word or one sentence.*
c) *Section – B (Q.21 to Q.26) are short answer type questions, carrying 2 marks each.*
d) *Section – C (Q.27 to Q.33) carrying 3 marks each.*
e) *Section – D (Q.34 to Q.36) are long answer type questions, carrying 5 marks each.*
f) *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.*
g) *Wherever necessary, neat and properly labelled diagram should be drawn.*

Section – A

Q.1: Object AB is places at the centre of curvature of a concave mirror. The inverted image of the object will be formed at the centre of curvature. Draw a ray diagram to show this case. 1

Q.2: What is the value of refractive index for water and a crown glass? 1

Q.3: What is dioptre?

Or

Give any one point of difference between a concave lens and a convex lens. 1

Q.4: A person is wearing spectacles with a concave lens of suitable focal length. What kind of defect of vision is he having?

a. Myopia
b. Hypermetropia
c. Presbyopia
d. Both b & c

Q.5: In electric fittings we mostly use copper wires. Why? 1

Q.6: In presence of sunlight, silver chloride decomposes to give silver and chlorine gas. Write a balanced chemical equation for it. 1

Q.7: Which of the following processes involve chemical reactions? 1

a. Storing of oxygen gas under pressure in a gas cylinder
b. Liquefaction of air
c. Keeping petrol in a china dish in the open
d. Heating copper wire in presence of air at high temperature

Q.8: Draw electron dot structure for ammonia molecule.

Or

Write the structural formula of Cyclohexane.

Q.9: Arrange the following metals in the order of their increasing reactivity. 1

Copper, Aluminium, Silver, Zinc, Iron

Q.10: Which one of the following four metals would be displaced from the solution of its salts by other three metals? 1

a. Magnesium
b. Silver
c. Zinc

d. Copper

Q.11: Name any four common waste disposal methods. 1

Q.12: Draw a flow chart depicting a reflex action. 1

Q.13: What is a universal indicator? 1

For question number 14 to 16, two statements (Assertion A and Reason R) are given. Select the correct answer to these questions from codes a, b, c and d as given below. 1

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

Q.14:

Assertion: When zinc is dipped in copper sulphate solution, reddish brown particles are found to settle at the bottom.

Reason: Zinc displaces copper to form zinc sulphate and reddish brown particles of copper settle at the bottom of the beaker.

Q.15: 1

Assertion: Pea plant having violet flowers is crossed with a pea plant having white flowers. All the flowers in the first generation are violet.

Reason: White colour gene is not passed on to next generation.

Q.16: 1

Assertion: Food chain is responsible for the entry of harmful chemicals in our bodies.

Reason: The length and complexity of food chain vary greatly. 1

Q. No. 17 to 20 contain 5 sub-parts each. You are expected to answer any four sub-parts in these questions.

Q.17: Read the following and answer any four questions.

Around every current carrying conductor, there is a magnetic field. The direction of magnetic field depends on the direction of electric current in a conductor. 1 × 4

i. Which among the following is used to find out the direction of magnetic field line around a current carrying straight conductor.
   a. Ampere's swimming rule
   b. Fleming's right hand thumb rule
   c. Fleming's left hand rule
   d. Faraday's rule

ii. Magnitude of magnetic field around a current carrying conductor at any point is
   a. directly proportional to the intensity of electric current
   b. inversely proportional to the distance (r) from the conductor
   c. directly proportional to the distance (r) from the conductor
   d. both a & b

iii. To find out the direction of the deflection of the compass needle due to magnetic field of a current carrying conductor, we use
   a. Ampere's swimming rule
   b. Fleming's right hand thumb rule
   c. Fleming's left hand rule
   d. Faraday's rule

iv. Current carrying conductor is a
   a. Permanent magnet
   b. Temporary magnet
   c. Natural magnet

d. None of the above

v. Which among the following produces strong magnetic field?
   a. Permanent magnet
   b. Natural magnet
   c. Bar magnet
   d. Electromagnet

Q.18: Read the following and answer any four questions.

When we move along the period or down the group of a periodic table, the chemical and physical properties of elements show variation. 1 × 4

i. The distance between the centre of the nucleus and the outermost shell is called atomic size. On moving from left to right in a period of the periodic table, atomic size of the elements
   a. Increases
   b. decreases
   c. remains same
   d. first increases then decreases

ii. On moving down the group in a periodic table, metallic character of elements
   a. increases
   b. decreases
   c. remains same
   d. first decreases then increase

iii. F, Cl, Br and I belong to halogen family. All of them are electronegative. Which among these has highest electronegativity?
   a. F
   b. Cl
   c. Br
   d. I

iv. When we go down the group in a periodic table, a new shell of electrons is added at each succeeding element. So what happens to the valency of elements down the group?
   a. It increases down the group
   b. It decreases down the group
   c. It increases up to 4 then decreases to zero down the group
   d. It remains same down the group

v. When we go down the group in a periodic table,
   a. Only physical properties show variation
   b. only chemical properties show variation
   c. both physical and chemical properties show variation
   d. properties remain same

Q.19: Read the following and answer any four questions.

Acids are the substances which contain hydrogen and which when dissolved in water give hydrogen ions (H^+) in the solution. And bases are the substances which when dissolved in water gives hydroxide (OH^-) ions in the solution. pH is the number which represents the acidic or basic nature of the solution. 1 × 4

i. A substance having a pH value of 12 is a
   a. strong acid
   b. strong base
   c. weak acid

d. weak base

ii. pH value of weak acids ranges from
a. 0 to 3
b. 7 to 10
c. 5 to 7
d. 12 to 14

iii. Which among the following is a weak acid
a. Hydrochloric acid
b. Acetic acid
c. Sulphuric acid
d. Nitric acid

iv. The reaction between H^+ ions given by the acid with the OH^- ions given by the base to form water, is called
a. Crystallisation
b. Condensation
c. Neutralization
d. both b & c

v. Strong bases when dissolved in water
a. dissociate completely into ions
b. give large amounts of OH^- ions in the solution
c. dissociate incompletely and give less number of ions
d. both a & b

Q.20. Read the following and answer any four questions.

Conservation means the controlled utilization of natural resources and their management in such a way to provide sustained availability, prevention of wastage, recycling and substitution. 1 × 4

i. Which factor is mainly responsible for increase in demand of natural resources?
a. Increased human population
b. use of biodegradable chemicals
c. scientific advancement
d. environmental pollution

ii. The three R's that will help us to conserve natural resources for longer term are
a. reduce, regenerate, reuse
b. reuse, regenerate, recycle
c. reduce, recycle, reuse
d. reduce, reuse, redistribute

iii. The important message conveyed by the "Chipko Movement" is
a. to involve the community in forest conservation effort
b. to ignore the community in forest conservation effort
c. to cut down forest trees for developmental activities
d. government agencies have right to order destruction of forest trees

iv. Select the incorrect statement
a. Economic development is linked to environmental conservation
b. Sustainable development encourages development for current generation and conservation of resources for future generation
c. Sustainable development does not consider the view points of stakeholders
d. Sustainable development is a long planned and persistent development

v. Which among the following activities is eco-friendly?

a. Using polythene bags for shopping
b. Using dyes for colouring clothes
c. Using windmills to generate power for irrigation
d. Using car for transportation

Section – B

Q.21: State any two practices which can help in the protection of our environment.

OR

What do you mean by Global warming?

Q.22: What is the basic cause of atmospheric refraction? 2

Q.23: Mention any two functions of human ovary. 2

OR

What is the importance of DNA copying in reproduction? 2

Q.24: During the process of dispersion you have observed that the white light on passing through a glass prism dispersed into its constituent colours. During this dispersion, what is the reason for the violet light to bend more than then the red light? 2

Q.25: Draw a circuit diagram consisting of a battery of two cells of 2V each, three resistors having the resistance of 2 ohm, 3 ohm and 5 ohm respectively and a key. All are connected in series. 2

Q.26: What is the function of blood capillaries surrounding the nephron? 2

Section – C

Q.27: What are the advantages of sexual reproduction over asexual reproduction?

OR

Differentiate between self pollination and cross pollination. 3

Q.28: Show XX-XY type of sex determination in human beings through a diagram. 3

Q.29: Give any three applications of heating effect of electric current. 3

Q.30: Give advantages of hydel power plants over thermal power plants. 3

Q.31: When we keep silver bromide in sunlight for some time, it is observed that yellow silver bromide turns grey. What type of chemical reaction is this? Write down a balanced chemical equation for the said reaction. 3

Q.32: Describe briefly the electrolytic refining of copper. 3

Q.33: What do you mean by apical dominance? Name the hormone that controls it. 3

Section – D

Q.34: With the help of a ray diagram, explain the following terms:

i. Principal focus of a concave mirror
ii. Principal focus of a convex mirror
iii. Centre of curvature 5

OR

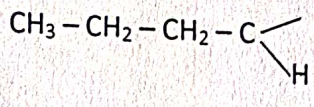
The focal length of a concave lens is 20cm. At what distance from the lens a 5cm tall object be placed so that it will form an image at 15 cm from the lens? Also calculate the size of the image formed.

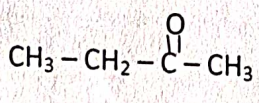
Q.35: Write the IUPAC names for the following compounds:

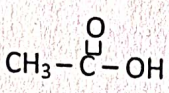
i. $CH_3 - CH_2 - CH_2 - OH$

ii. $CH_3 - CH_2 - CH_2 - \underset{\displaystyle Br}{\underset{|}{CH}} - CH_3$

O

iii. 

iv. 

v. 

OR

Explain the following with examples:

i. Addition reactions
ii. Combustion reactions
iii. Substitution reactions

Q.36: What is heterotrophic nutrition? Explain different types of heterotrophic nutrition. 5

OR

Describe the process of transportation of water and food in plants. 5

Objectives	Knowledge					Understanding					Application					Skill					Total Marks
Unit	**LA**	**SA3**	**SA2**	**VSA**	**MCQ**	**LA**	**SA3**	**SA2**	**VSA**	**MCQ**	**LA**	**SA3**	**SA2**	**VSA**	**MCQ**	**LA**	**SA3**	**SA2**	**VSA**	**MCQ**	
Light	5(1)			1(1)					1(1)										1(1)		**8**
Human Eye & the colourfull World			2(1)						1(1)				2(1)								**5**
Electricity									1(1)			3(1)						2(1)			**6**
Magnetic effects of electric current														1(4)							**4**
Sources of energy		3(1)																			**3**
Chemical reactions & equations									1(2)			3(1)									**5**
Periodic classification of elements									1(4)												**4**
Carbon & its compounds	5(1)																		1(1)		**6**
Metals & Non-metals		3(1)							1(1)					1(1)					1(1)		**6**
Acids, Basis & Salts									1(1)					1(4)							**5**
Life processes	5(1)							2(1)													**7**
Control & Coordination		3(1)																	1(1)		**4**
How do organisms reproduce		3(1)	2(1)																		**5**
Heridity & Genetics							3(1)							1(1)							**4**
Our Environment				1(2)				2(1)													**4**
Management of Natural resources									1(4)												**4**
Sub-Total	**15(3)**	**12(4)**	**4(2)**	**3(3)**			**3(1)**	**4(2)**	**15(15)**			**6(2)**	**2(1)**	**10(10)**				**2(1)**	**4(4)**		**80**
Total	**34**					**22**					**18**					**6**					**80**