

2 PRE BOARD EXAMINATION 2018-19
SCIENCE - X

Max. Marks : 80

[Duration: 3 Hours]

General instructions:

- The question paper comprises of five sections – A, B, C, D and E. You are to attempt all the questions.
- All questions are compulsory.
- Internal choice is given in sections B, C, D and E.
- Question numbers 1 and 2 in Section-A are one-mark question. They are to be answered in one word or in one sentence.
- Question numbers 3 to 5 in Section- B are two marks questions. These are to be answered in about 30 words each.
- Question numbers 6 to 15 in Section-C are three marks questions. These are to be answered in about 50 words each.
- Question numbers 16 to 21 in Section-D are 5 marks questions. These are to be answered in 70 words each.
- Question numbers 22 to 27 in Section- E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

SECTION-A

1. Consider the following food chain which occurs in a forest: Grass → Deer → Lion
If 10000 J of solar energy is available to the grass, how much energy would be available to the deer to transfer it to the lion? 1
2. What is the role of pepsin in stomach? 1

SECTION-B

3. Draw the structures of the following compounds: 2
a.) Ethanoic Acid b.) Butanone
 4. List any four advantages of vegetative propagation. 2
 5. Refractive index of diamond with respect to glass is 1.6 and absolute refractive index of glass is 1.5. Find out the absolute refractive index of diamond. 2
- OR
- a.) Define principal focus of a concave mirror. (1+1)
 - b.) Why do we prefer a convex mirror as a rear- view mirror in vehicles?

SECTION-C

6. a) Define decomposition reaction. Write one equation each for decomposition reactions which takes place in the presence of light and electricity. (2+1)
b) Balance the following chemical equation:
$$\text{HNO}_3 + \text{Ca(OH)}_2 \longrightarrow \text{Ca(NO}_3)_2 + \text{H}_2\text{O}$$
7. a) Write the name given to bases which are highly soluble in water. Give an example. (1+1+1)
b) How is tooth decay related to pH? How can it be prevented?
c) Why does bee sting causes pain and irritation? Give one possible remedy for it. Justify your answer.

OR

- a) Why is Plaster of Paris written as $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$? (1+1+1)
- b) Why is sodium hydrogen carbonate an essential ingredient in antacids?
- c) Name the products obtained in Chlor-alkali process?

8. Given below are some elements of the modern periodic table. Atomic number of the elements are given in parenthesis. A(4), B(9), C(14), D(19) and E(20). (1+1+1)

- i. Select the element that has one electron in the outermost shell. Also, write the electronic configuration of this element.
- ii. Which two elements amongst these belong to the same group? Give reason for your answer.
- iii. Which two elements amongst these belong to the same period? Which one of the two has bigger atomic radius?

9. Smita's father has been advised by a doctor to reduce his sugar intake. (1+1+1)

- a) Name the disease he is suffering from and name the hormone whose deficiency causes this disease?
- b) Identify the gland that secretes it and mention the function of this hormone.
- c) Explain how the time and amount of secretion of this hormone is regulated in human system.

10. a) Name the respiratory organs of (2+1)

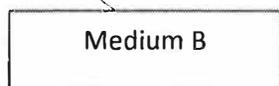
- (i) fish (ii) mosquito (iii) earthworm (iv) dog

b) Which part of the roots is involved in exchange of respiratory gases?

11.a. State the Laws of refraction. (2+1)

b. A ray of light enters from a medium A into a slab made up of transparent material B. Complete the path of ray of light till it emerges out of the slab. (Refractive index of medium A- 1.65 and B – 2.42)

Medium A



OR

- (i) Define power of a lens. Write its SI unit. (1+2)
- (ii) One student uses a lens of focal length 50 cm and another uses -50 cm. What is the nature and power of the lens used by each of them?

12.a. State Ohm's Law. (1+2)

b. An electric iron has a rating of 750 W, 220V. Calculate

- (i) current flowing through it
- (ii) its resistance when it is in use.

13.(a) Nichrome wire of length 'L' and radius 'R' has resistance of 10Ω . How would the resistance of the wire change when: (2+1)

- (i) only length of the wire is doubled?
- (ii) only diameter of the wire is doubled? Justify your answer.

(b) Why elements of electrical heating devices are made up of alloys?

14. Aditya suggests his family to install a solar water heater at their residence. But some of the family members were in favour of installing an electric geyser. (2+1)

Ultimately the family got water heater installed.

- (a) Which according to you was correct? Give two reasons in support of your answer.
- (b) Mention two possible changes in the thinking of the family members because of the arguments Given by Aditya.

15. What is a dam? Write two main advantages and two ill-effects of constructing a big dam.

OR

“Damage to the ozone layer is a cause for concern.” Justify this statement. Suggest any two steps to limit this damage.

3

SECTION-D

16. (a) State two methods of preventing the rusting of iron. (1+1+3)
(b) Name the ores of the following metals.
(i) Mercury (ii) Zinc
(c) Explain with the help of a diagram, how copper metal can be refined. Label the important arrangements in the experimental set up.
17. (i) Distinguish between saturated and unsaturated carbon compounds with one example of each. (2+2+1)
(ii) Write the chemical names of C_2H_6 and C_2H_2 and draw their structures.
(iii) Why carbon forms a large number of compounds?
OR
- a. Complete the following reactions: (2+2+1)
(i) $CH_3CH_2OH + O_2 \longrightarrow$
(ii) $CH_3COOH + NaOH \longrightarrow$
- b. How would you distinguish experimentally between an alcohol and a carboxylic acid?
c. Draw the electron dot structure of H_2S
- 18.a) Draw the diagram of male reproductive system and label the parts. (2+1+1+1)
b) In the human body what is the role of
(i) placenta in the development of human embryo.
(ii) List two functions performed by testis.
c) List any four reasons for adopting contraceptive methods.
- 19.a) The sex of the children is determined by what they inherit from their father and not their mother.” Justify. (1+1+1+2)
b) The human beings who look so different from each other in terms of colour, size and looks are said to belong to the same species. Why? Give reason.
c) Explain the term: (i) Speciation
d) A blue colour flower plant denoted by BB is cross bred with that of white colour flower plant denoted by bb.
(i) State the colour of flower you would expect in their F_1 generation plants.
(ii) What must be the percentage of white flower plants in F_2 generation if flowers of F_1 plants are self-pollinated?
(iii) State the expected ratio of the genotypes BB and Bb in the F_2 progeny.
OR
- a) How are fossils formed? Describe, in brief, two methods of determining the age of fossils. (2+1½+1½)
b) If we cross pure-bred tall (dominant) pea plant with pure-bred dwarf (recessive) pea plant we will get pea plants of F_1 generation. If we now self-cross the pea plant of F_2 generation, then we obtain pea plants of F_2 generation.
(1) What do the plants of F_2 generation look like?
(2) State the ratio of tall plants to dwarf plants in F_2 generation.
(3) State the type of plants not found in F_2 generation but appeared in F_2 generation, mentioning the reason for the same.
c) What are homologous organs? Can the wing of a butterfly and the wing of a bat be regarded as homologous? Why?
20. a) Which colour of white light suffers (i) least deviation (ii) maximum deviation. (1+2+2)
b) A student sitting at the back bench in a class is not able to see what is written on the blackboard. He however, sees it using concave lens of suitable focal length. Draw ray diagrams to illustrate the image formation in both the cases.
c.) Why do stars twinkle?

21. a. State Right hand thumb rule. (1+2+2)
 b. Draw the magnetic field lines around a circular loop and a bar magnet.
 c. List any two properties of magnetic lines of forces.

SECTION-E

22. A gas liberated with brisk effervescence, when you add acetic acid to sodium hydrogen carbonate in a test tube. Name the gas and identify the test that confirms the identity of the gas.

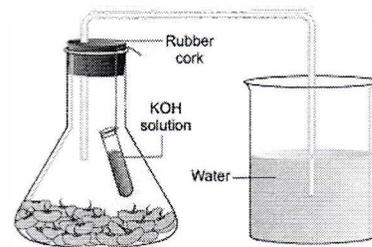
OR

What is observed when a solution of sodium sulphate is added to barium chloride taken in a test tube? Name the type of chemical reaction and write the chemical equation. 2

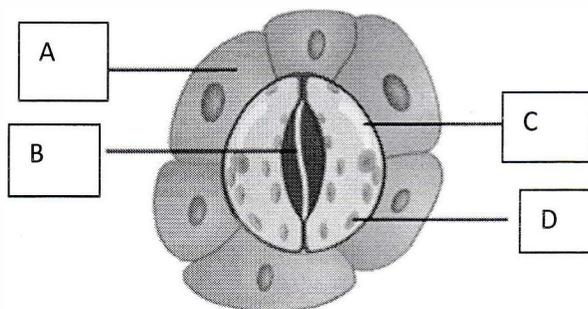
23. What do you observe when you drop few drops of HCl in the following: 2
 a. Blue litmus solution b. Zinc granules c. NaOH d. Sodium carbonate solution

24. Why does the water level rise in the delivery tube during the experiment that CO₂ is given out during respiration in plants. Give in two steps. 2

OR



A student prepared the temporary mount of stained leaf peel. After observing the slide under microscope, he drew the following sketch. Identify and name the parts labelled as A, B, C and D. 2



25. Name the type of asexual reproduction in which two individuals are formed from a single parent and the parental identity is lost. Draw the initial and final stages of this type of reproduction. State the event with which this reproduction starts. 2

- 26 Draw a path of light ray passing through a prism. Label angle of incidence, angle of refraction, angle of deviation and angle of prism in the ray diagram

- 27 The values of current I flowing in a given resistor for the corresponding values of potential difference V across the resistor are given below.

I(ampere)	0.5	1.0	2.0	3.0	4.0
V(volt)	1.6	3.4	6.7	10.2	13.2

Plot a graph between V and I and calculate the resistance of the resistor.