



**INDIAN SCHOOL SOHAR**  
**PRE BOARD (2019 -20)**  
**SUBJECT: SCIENCE**

CLASS: X

Max. Marks: 80

DATE: 29/01/2020

Duration: 3Hrs

**General Instructions:-**

1. The question paper comprises of **three** Sections - **A, B and C**. Attempt **all** the sections.
2. The question paper consists of a total of 30 questions. **All** questions are compulsory.
3. All questions in Section **A** are **one-** mark questions comprising of MCQ, VSA type and assertion and reasoning type questions. They are to be answered in one word or in one sentence.
4. All questions in Section **B** are **three-**mark short-answer type questions. These are to be answered in about 50-60 words each.
5. All questions in Section **C** are **five-**mark, long-answer questions. These are to be answered in about 80-90 words each.
6. Internal choice is given in each section.
7. Wherever necessary the diagrams drawn should be neat and properly labelled.

**SECTION A**

1. In a cross of pure tall pea plant (TT) with the short plant (tt) only tall plants were produced in the F<sub>1</sub> generation and both tall and dwarf in the F<sub>2</sub> generation. Give the phenotypic and genotypic ratio of tall plants to short plants in the F<sub>2</sub> generation of the given cross. 1
2. List any two measures for conserving forests. 1
3. **Question numbers 3(a) - 3(d) are based on the table given below.** Analyse the following observation table showing variation of image distance with object distance in case of convex lens and answer the following questions, without any calculations:

S.No.	Object distance $u$ (cm)	Image distance $v$ (cm)
1	-90	+ 18
2	-60	+20
3	-30	+30
4	-20	+60
5	-18	+90
6	-10	+100

- 3(a) What is the focal length of the convex lens? Give reason in support of your answer. 1
- 3(b) Write the serial number of the observation which is not correct. How do you arrive at this conclusion? 1
- 3(c) The approximate value of magnification in case of S.No. 4 is
 

(i) -2	(ii) -3	(iii) +3	(iv) +2	1
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- 3(d) The nature of image formed in the case of S.No.2 is \_\_\_\_\_.
 

(i) virtual and enlarged	(ii) virtual and diminished
(iii) real and diminished	(iv) real and enlarged.

1

4. Answer question numbers 4(a) – 4(d) on the basis of your understanding of the following paragraph and the related studied concepts.

The compounds entirely consisting of carbons and hydrogens are known as Hydrocarbons.

**Saturated Hydrocarbons:** The hydrocarbons having only single bonds between carbon atoms are called saturated hydrocarbons. This includes alkanes having general formula  $C_nH_{2n+2}$ . The first member of homologous series of 'alkanes' is methane ( $CH_4$ ).

**Unsaturated Hydrocarbons:** The hydrocarbons having double or triple bonds between the carbon atoms are called unsaturated hydrocarbons. This includes alkenes and alkynes having general formula  $C_nH_{2n}$  and  $C_nH_{2n-2}$  respectively. The first member of homologous series of 'alkenes' is Ethene ( $C_2H_4$ ). The first member of homologous series of 'alkynes' is Ethyne ( $C_2H_2$ ).

4(a) Select alkenes and alkynes from the following:

$C_2H_4$ ,  $C_3H_4$ ,  $C_2H_2$ ,  $C_5H_{10}$  1

4(b) Name the reaction used to convert unsaturated hydrocarbons to saturated hydrocarbons. 1

4(c) Name the catalyst used in the above conversion reaction. 1

4(d) Draw the structure of hydrocarbon with general formula  $C_nH_{2n-2}$  where  $n=4$ . 1

5. The focal length of the eye lens increases when eye muscles

- i) relax and the lens becomes thinner                      ii) contract and lens becomes thicker  
iii) relax and the lens becomes thicker                      iv) contract and lens becomes thinner. 1

6. Two resistors of resistance  $2\Omega$  and  $4\Omega$  connected to a battery will have

- i) same current flowing through them when connected in parallel  
ii) same current flowing through them when connected in series  
iii) same potential difference across them when connected in series  
iv) different potential difference across them when connected in parallel. 1

7. A full length image of a distant tall building can definitely be seen by using

- i) a concave mirror    ii) a convex mirror  
iii) a plane mirror    iv) both concave as well as plane mirror.

**OR**

Twinkling of stars are due to atmospheric

- i) Dispersion of light by water droplets  
ii) Refraction of light by different layers of varying refractive indices  
iii) Scattering of light by dust particles  
iv) Internal reflection of light by clouds. 1

8. Buckminster fullerene is an allotropic form of

- i) Phosphorus              ii) Sulphur                      iii) Carbon                      iv) Tin.

**OR**

The name of the given compound  $CH_3-CH_2-CH_2-CHO$  is:

- i) Propanal                      ii) Propanol                      iii) Butanal                      iv) Butanol. 1

9. Which of the following statement is true about glucagon?

- i) It regulates carbohydrate metabolism in the body.  
ii) It increases blood sugar level.  
iii) Iodine is required to synthesize glucagon.  
iv) It decreases blood sugar level. 1

10. Which among the following disease is not sexually transmitted?  
 i) Syphilis            ii) Hepatitis            iii) HIV-AIDS            iv) Gonorrhoea.            1
11. If the fossil of an organism is found in the deeper layers of earth, then we can predict that  
 i) The extinction of organism has occurred recently.  
 ii) The extinction of organism has occurred thousands of years ago.  
 iii) Fossil position in the layers of earth is not related to its time of extinction.  
 iv) Time of extinction cannot be determined.            1
12. Which of the following set of elements are written in order of their increasing metallic character?  
 i) Be, Mg, Ca            ii) Na, Li, K            iii) Mg, Al, Si            iv) C, O, N.

**OR**

Which of the following element will form an acidic oxide?

- i) An element with atomic number 7            ii) An element with atomic number 3  
 iii) An element with atomic number 12            iv) An element with atomic number 19.            1

**For question numbers 13 and 14, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below.**

- i) Both **A** and **R** are true and **R** is the correct explanation of the Assertion.  
 ii) Both **A** and **R** are true but **R** is not the correct explanation of the Assertion.  
 iii) **A** is true but **R** is false.  
 iv) **A** is false but **R** is true.
13. **Assertion:** Magnetic field lines have both direction and magnitude.  
**Reason:** The field lines, emerge from the north pole and merge at south pole.            1
14. **Assertion:** Burning of fossil fuels cause air pollution  
**Reason:** Fossil fuels are renewable source of energy.            1

### SECTION B

15. i) How would you bring about the following conversions? Write the reactions involved.  
 (a) Ethanol to Ethene            (b) Ethanol to Ethanoic acid.  
 ii) What happens when soap solution in a test tube is shaken with (a) soft water and (b) hard water?

**OR**

Write the balanced chemical equation for the reaction of Ethanoic acid with the following:

- (i) Sodium            (ii) Sodium hydroxide            (iii) Ethanol.            3
16. i) What happens chemically when quick lime is added to water?  
 ii) Write the balanced equation for the following reaction:  
 Aluminium + Bromine  $\longrightarrow$  Aluminium bromide  
 iii) What is redox reaction?            3
17. i) Why do HCl, HNO<sub>3</sub> show acidic characters in aqueous solutions, while solution of alcohol and glucose does not show acidic character?  
 ii) How is the concentration of hydroxide ions (OH<sup>-</sup>) affected when excess base is dissolved in a solution of sodium hydroxide?            3

18. i) "Energy flow in a food chain is unidirectional". Justify the statement.  
 ii) Make an aquatic food chain upto tertiary consumer level. State the trophic level at which concentration of pesticide is maximum and why? 3
19. What happens when:  
 i) Planaria is cut into three different pieces.  
 ii) Leaf of Bryophyllum with notches fall on the soil.  
 iii) Testosterone is released in the male reproductive system. 3
20. Write the steps of photosynthesis in sequence? How is it different in desert plants and those in temperate regions?
- OR**
- How are water and minerals absorbed and transported in the plants? 3
21. i) Insects, Octopus and Vertebrates all have eyes. Can we group eyes of these animals together to establish a common evolutionary origin?  
 ii) 'Birds have evolved from reptiles'. State an evidence to prove the statement. 3
22. Describe the process of conversion of geothermal energy into electrical energy. Mention its limitation. 3
23. The image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed at a distance of 60 cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2.4 cm, find the height of its image.
- OR**
- If the image formed by a spherical mirror for all positions of the object, placed in front of it, is always diminished, erect and virtual. State the type of mirror and also draw a ray diagram to justify your answer. Write one use of such mirror. 3
24. i) Mention the role of crystalline lens in the human eye.  
 ii) A person needs a lens of power -6D for correcting his distinct vision. For correcting his near vision, he needs a lens of power +2D. Find the focal length of the lenses and its nature required for correcting his distant and near vision separately. 3

### SECTION C

25. i) Answer the following questions based on the modern periodic table.  
 (a) Why do H, Li, and Na show similar properties?  
 (b) Atomic size of Mg is bigger than Be, Why?  
 (c) Why are He, Ne and Ar called noble gases?  
 (d) Write the common name of the family to which F and Cl belong.  
 (e) Write the trend of nonmetallic character in the horizontal row from Na to Cl.  
 (f) How does the atomic size vary as we move from Li to F in the second period of periodic table?  
 ii) State the Modern Periodic Law.  
 iii) Give one example of Triads. 5
26. i) Write the balanced chemical equations for the extraction of copper metal from its ore.  
 ii) Name the method used to extract metals of high reactivity.  
 iii) Define the term 'Alloy'. Write two advantages of making alloys.
- OR**
- i) How is washing soda prepared from baking soda? Write the balanced chemical equations. Give two uses of washing soda.  
 ii) Name the acid present in ant sting.  
 iii) Give two examples of hydrated salts which are coloured and state their chemical formula. 5

27. i) Draw the structure of a neuron and label the following in it:

Dendrite, Cell body, Axon and Terminal button.

ii) Name the part of neuron:

(a) Where information is acquired.

(b) Through which information travels as an electrical impulse.

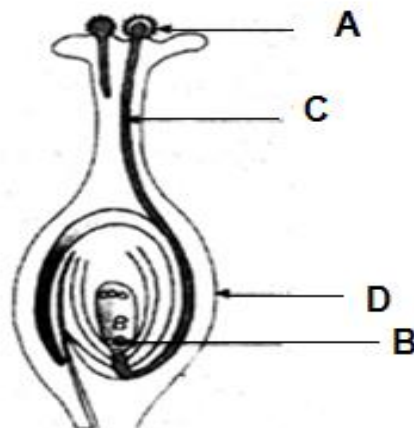
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28. What is meant by double circulation? Give the schematic diagram to show the direction of blood flow. Name the group of animals with double circulation. How is it important for them?

**OR**

i) List two reasons for appearance of variation among the progeny formed by sexual reproduction.

ii) Study the given figure and answer the following questions:



(a) Name the part labelled "A" in the diagram.

(b) How does part "A" reach part "B".

(c) State the importance of part "C".

(d) What happens to the part marked "D" after fertilization.

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29. What is meant by magnetic force? Name and explain the rule to determine the direction of force experienced by a current carrying conductor in a magnetic field. How does this force get affected on:

i) Doubling the magnitude of current

ii) Reversing the direction of flow of current.

iii) Reversing the direction of magnetic field.

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30. i) An electric bulb is rated as 50W, 220V. Calculate the energy consumed by the bulb in 20 minutes. Express your answer in commercial unit of electric energy.

ii) Distinguish between the term overloading and short circuit as used in domestic circuits.

iii) Why is it essential to earth electrical appliances having metallic body?

**OR**

i) Cable of microwave oven has three wires inside which have insulation of different colours black, green and red. Mention the significance of each colour and the potential difference between red and black.

ii) Design an activity with the help of a very thin aluminium sheet, two nails, a 12V battery and a key to illustrate how the fuse works.

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