

BANGALORE SAHODAYA SCHOOLS COMPLEX
PRE-BOARD EXAMINATION 2019-20
SCIENCE – Code - 086
SET-1

Class: X

Max. Marks: 80

Date: 20/01/2020

Time: 3 Hrs

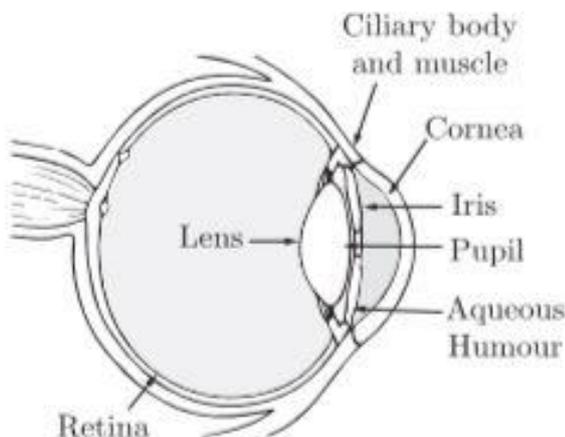
.....
General Instructions:

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

SECTION – A

1. Which element exhibits the property of catenation to maximum extent and why? 1
2. Why does calcium float in water? 1
3. Answer question numbers 3 (a) – 3 (d) on the basis of your understanding of the following paper on the related studied concepts.

The human eye is like a camera. Its lens system forms an image on a light sensitive screen called retina. Light enters the eye through a thin membrane called the cornea. It forms the transparent bulge on the front surface of the eye ball as shown in the figure. The crystalline lens nearly provides the finer adjustment of the focal length required to focus objects at different distance on the retina. We find a structure called Iris behind the cornea. It is a dark muscular diaphragm that controls the size of the pupil. The pupil regulates and controls the amount of light entering the eye.



There are mainly three common refractive defects of vision. These are (i) myopia or near sightedness (ii) Hypermetropia or far sightedness. (iii) Presbyopia, these defects can be corrected by the use of suitable spherical lenses.

- 3 (a) What is the function of pupil in human eye? 1
 3 (b) Name the part of the eye which controls the size of the pupil? 1
 3 (c) What is far point and near point of human eye with normal vision? 1
 3 (d) A student has difficulty in reading the black board while sitting in the last row. What could be the defect the child is suffering from? 1

4. Questions numbers 4(a) – 4(b) are based on the two tables given below and the related studied concepts. Analyse the tables related to blood pressure of a patient and answer the questions that follow.

Table A: Blood Pressure Chart

Remarks	Systolic (mm of Hg)	Diastolic (mm of Hg)
Doctor's advice required	200-400	100 or higher
Good	100-140	80-89
Excellent	120	80

Table B: Blood Pressure report of a patient

Checking Time	Systolic (mm of Hg)	Diastolic (mm of Hg)
Blood Pressure for a week	130-150	100-120

- 4(a) Refer Table B that shows the blood pressure report of a patient. Which disease can be diagnosed from the given data? 1
 4(b) What is meant by systolic pressure? 1
 4(c) Refer Table A and find out the normal blood pressure value. 1
 i) 140 -80 mm of Hg
 ii) 140 – 100 mm of Hg
 iii) 120 – 80 mm of Hg
 iv) 160 – 120 mm of Hg
 4 (d) Which part of the brain controls blood pressure? 1
 i) Medulla
 ii) Cerebellum
 iii) Spinal Cord
 iv) Cerebrum

5. The focal length of the eye lens increases when eye muscles 1
- i) are relaxed and lens becomes thinner.
 - ii) contracts and lens becomes thicker.
 - iii) are relaxed and lens becomes thicker.
 - iv) contracts and lens becomes thinner.

OR

The magnification produced by a rear view mirror fitted in vehicles is _____ depending on positions of the object in front of it.

- i) $m < 1$ ii) $m > 1$ iii) $m = 1$ iv) $m < 1$ or $m > 1$
6. 25 joules of work is done in moving a charge of 5C across points A and B. What is the potential difference between A and B 1
- i) IV ii) 125 V iii) 5 V iv) 625 V
7. Magnetic field inside a solenoid is 1
- i) Zero.
 - ii) Decrease as move towards it ends.
 - iii) Increases as move towards it ends.
 - iv) Same at all points
8. The following reaction is used for preparation of oxygen gas in the laboratory. 1
- $$2\text{KClO}_3 (\text{s}) \xrightarrow[\text{Catalyst}]{\text{Heat}} 2\text{KCl} (\text{s}) + 3\text{O}_2 (\text{g})$$

Which of the following statement is correct about the reaction?

- i) It is a decomposition reaction and endothermic in nature.
 - ii) It is a combustion reaction.
 - iii) It is a decomposition reaction and is accompanied by release of heat.
 - iv) It is a photochemical decomposition reaction and exothermic in nature.
- OR**
- A dilute solution of sodium carbonate was added to two test tubes one containing dil HCl (A) and other containing dil NaOH (B). The correct observation was :-
- i) A brown coloured gas liberated in test tube A
 - ii) A brown coloured gas liberated in test tube B
 - iii) A colourless gas liberated in test tube A
 - iv) A colourless gas liberated in test tube B
9. A person cannot see distinctly objects kept beyond 2 meters, this defect can be corrected by using a lens of power. 1
- i) + 0.5 D ii) - 0.5 D iii) + 0.2 D iv) - 0.2 D

10. When we consider the conservation of forests, we need to look at the 1
- i) People who are humanists and conscious about human rights.
 - ii) Industrialists who use the various forests produce
 - iii) The people who live in or around forests.
 - iv) The forest department of the Government and industrialists.

11. In methanoic acid 1
- i) Each atom of oxygen shares two electrons with carbon.
 - ii) Each atom of oxygen shares one electron with carbon.
 - iii) One atom of oxygen shares two electrons and the other atom of oxygen shares one electron with carbon.
 - iv) One atom of oxygen shares two electrons with carbon and two atoms of hydrogen shares two electrons with carbon.

12. Which of the following property increases down the group? 1
- a) Electro – negativity
 - b) Electro – positive nature of element
 - c) Valency
 - d) Atomic size

- i) a and b
- ii) a and c
- iii) b and d
- iv) b and c

OR

Which of the following statement is incorrect for atomic size.

- i) Atomic size of C > N
- ii) Atomic size of F > O
- iii) Atomic size of Be > B
- iv) Atomic size of N > O

For question numbers 13 and 14, two statements are given –one labeled *Assertion*(A) and 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 A.
- (ii) Both A and R are true but R is not the correct explanation of A.
- (iii) A is true but R is false.
- (iv) A is false but R is true.

13. **Assertion (A)** : Isotopes of an element are placed in the same position in Modern Periodic Table. 1
Reason (R) : The electronic configuration of all isotopes of an element is same.

14. **Assertion (A)**: If a graph is plotted between the potential difference and the current flowing, the graph is a straight line passing through the origin. 1
Reason (R) : The current is directly proportional to the potential difference.

SECTION-B

15. i) Write the name given to bases that are highly soluble in water. Give an example. 3
ii) Name the major constituents of soda acid Fire extinguisher.
iii) Why does bee-sting cause pain and irritation?
Rubbing of baking soda on the sting areas gives relief. Why?

OR

A white powder is added while baking breads and cakes to make them soft and fluffy. Write the name of the powder? Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking?

16. i) Write the essential condition for the following reaction to take place. 3
$$2 \text{AgBr} \longrightarrow 2\text{Ag} + \text{Br}_2$$

Write one application of this reaction and balance.

- ii) Complete and balance following chemical equation.



- iii) What happens when water is added to quick lime? Write balanced chemical equation.

17. Following represent a part of the Modern Periodic Table in which six elements have been represented by the letters A, B, C, D, E and F. (these are not the chemical symbols of the elements)

Group/Periods	1	2	13	14	15	16	17	18
1								
2	A		B				C	D
3	E					F		

3

- i) Select the element which represent a halogen.
ii) Select the element with highest metallic character.
iii) What is the similarity in the electronic configuration of A and B?
iv) Select the elements which form univalent ions.
v) What will be the formula of the compound formed by B and F?
vi) Where would you place an element G with electronic configuration 2, 8, 4 in the given table?

18. i) Differentiate between Reflex action and voluntary action. 3
ii) With the help of a labeled diagram trace the sequence of events which occur when we touch a hot object.

19. i) How is the sex of a newborn determined in human? 3
ii) Does the genetic combination of mothers play a significant role in determining the sex of a newborn?

OR

Mention three important features of fossil which help in the study of evolution.

20. i) Name the glands that secrete 3
a) Insulin
b) Thyroxin
ii) Explain with an example how the timing and the amount of hormones secreted are regulated by the human body.

21. i) Create an aquatic food chain showing four trophic levels. 3
ii) Explain biological magnification with the help of food chain.

22. A student focused image of a candle flame on a white screen using a convex lens. He noted down the position of the candle, screen and the lens as under. 3

Position of candle = 12.0 cm

Position of the screen = 88.0 cm

Position of convex lens = 50.0 cm

- a) What is the focal length of the convex lens?
b) Where will the image be formed, if we shift the candle towards the lens at a position of 31.0 cm?
c) What will be the nature of the image formed, if he further shifts the candle towards the lens?

OR

- i) What is meant by scattering of light?
ii) Explain why the sky appears blue and the sun appears reddish at sun rise and sun set?
iii) The absolute refractive indices of two media 'A' and 'B' are 2.0 and 1.5 respectively. If the speed of light in medium 'B' is 2×10^8 m/s, calculate the speed of light in:
a) Vacuum b) medium 'A'

23. i) Three resistors R_1 , R_2 and R_3 are connected in parallel and the combination is connected to a battery, ammeter, voltmeter and key. Draw a suitable diagram and obtain equivalent resistance for parallel combination. 3
ii) Two bulbs 60W, 220V and 40W, 220V are connected in series. Which of the bulb glow brighter and why?

24. i) What is wind energy farm? 3
ii) Write two advantages of harnessing wind energy.
iii) Write two limitations of harnessing wind energy.

SECTION C

25. You are given balls and stick model of six Carbon atoms and fourteen Hydrogen atoms and sufficient number of sticks. In how many ways one can join the models of six carbon atoms and fourteen hydrogen atoms to form different molecules of C_6H_{12} . Write IUPAC name of each molecule. 5

OR

An organic compound A on heating with conc. H_2SO_4 forms another compound B. The compound B on addition of hydrogen in the presence of nickel catalyst forms a saturated compound C. One molecule of C on combustion in air forms CO_2 and H_2O . Identify A, B and C write their chemical name. Write balance chemical equations for the reactions involved. 5

26. i) Distinguish between 'roasting' and 'calcination'. Give chemical equation for both the process 5
ii) Write a chemical equation to illustrate the use of aluminum for joining cracked railway lines.
iii) Name the anode, the cathode and the electrolyte used in the electrolytic refining of impure copper.

27. i) Sketch the fate of pyruvate in respiration. 5
ii) Justify the absence of specialized organs of respiration in unicellular and simple multicellular organisms.

OR

- i) Name the structural and functional unit of kidney. Draw neat labelled diagram of the same.
ii) Assess the problems arising and solutions to opt for during kidney failure.

28. i) What are chromosomes? How is the number of chromosomes of the parent cells maintained in the cells of the offspring's of sexually reproducing organisms? 5
ii) Mention the changes flower undergoes after fertilization.

29. i) Describe an activity to demonstrate the pattern of magnetic field lines around a straight conductor carrying current. 5
ii) State the rule to find the direction of magnetic field associated with a current carrying conductor.
iii) A 4kW heater is connected to a source of power.
Calculate a) current passing through heater. b) The resistance of the heater.

30. i) A lens produces a magnification of -0.5. Is this a converging or diverging lens? If the focal length of the lens is 6 cm.

Draw a ray diagram showing the image formation in this case. 5

- ii) A girl was playing with a thin beam of light from a laser torch by directing it from different directions on a convex lens held vertically. She was surprised to see that in a particular direction, the beam of light continues to move along the same direction after passing through the lens.
State the reason for the observation.
Draw a ray diagram to support your answer.

OR

An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.

- i) Use the lens formula to find the distance of the image from the lens.
ii) List the four characteristics of image formed by the lens in this case.
iii) Draw a ray diagram to justify your answer.