NEW HORIZON GURUKUL

PRE-BOARD EXAMINATION 2019-20

SCIENCE – Code - 086

SET-2

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. Define homologous series of organic compounds. 1

2. Hydrogen gas is not evolved when most metals reacts with nitric acid. Why? 1

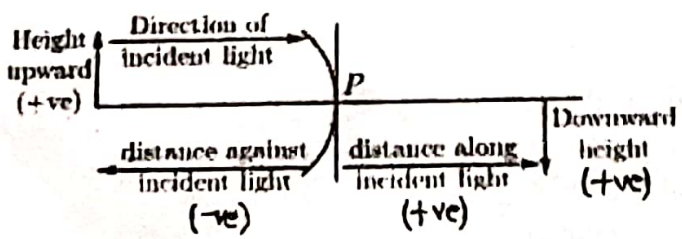
3. Answer the questions 3(a) – 3(d) on the basis of your understanding of the following and the related studied concepts.
While dealing the reflection of light by spherical mirrors, we shall follow a set of sign convention. In this convention the pole (P) of the mirror is taken as the X- axis of the co-ordinate systems. In a spherical mirror the distance of the object from its pole called the object distance *(u)*, the distance of the image from the pole of the mirror is called the Image distance *(v)*.Magnification produced by a spherical mirror gives the relative extent to which the image of an object is magnified with respect to the object size. It is expressed as the ratio of the height of the image to the height of the object. It is usually represented by the letter *(m)*.

3(a) How can you calculate the magnification of a spherical mirror? 1

3(b) What does a negative sign in the value of the magnification indicate? 1

3(c) Find the focal length of the convex mirror whose radius of curvature is 32cm. 1

3(d) Why does the height of the object is taken to be positive? 1



4. Questions numbers 4(a) – 4(b) are based on the two tables given below. Study this table and answer the questions that follow:

More than a million Americans die of cardiac diseases each year. One of the major causes is high cholesterol levels in the blood. The National Cholesterol Education Program suggests that total blood cholesterol level should be:

Blood Cholesterol Level Chart			
	Desirable	Borderline (high)	High Risk
Total Cholesterol	< 200	200-240	> 240
Triglycerides	< 150	150-200	> 200
Low Density Cholesterol	< 130	130-160	> 160
High Density Cholesterol	> 50	50-35	< 35

Given below are blood report of two persons

	Total Cholesterol	Triglycerides		
Patient A	356	180		
Patient B	180	100		

4(a) Which of the organ can be affected in patient A? Can you infer the same risk factor for patient B?1

4(b) What information is left out for the blank columns? 1

4(c) A person with high risk category have to be suggested a suitable diet? Which of the following are correct guidelines for the patient. 1

i) High sugar and starch
ii) Low salt and fats
iii) High proteins
iv) Low salt and fat

4(d) Apart from following a prescribed diet, some other changes should be brought in the lifestyle to avoid aggravation of symptoms in a patient who is already suffering from high blood cholesterol 1

A) Yoga and exercise
B) Quitting smoking and alcohol
C) Walking and doing small chores on your own
D) Enjoying loud music

Which of the following is the correct option

i) A, C ii)B, C, D
iii) A, B, C iv) A, D

5. A lens has a power of + 0.5 D it is 1

i) A concave lens of focal length 5m
ii) A convex lens of focal length 5m
iii) A convex lens of focal length 2m
iv) A concave lens of focal length 2m

OR

No matter how far you stand from a spherical mirror your image appears erect. The mirror may be

i) Plane mirror
ii) Concave mirror
iii)Convex mirror
iv) Either plane or convex mirror

6. Magnetic field lines due to a straight wire carrying current are 1

i) Straight ii) Circular iii) Parabolic iv) Elliptical

7. The resistivity does not change if 1

i) the material is changed
ii) the temperature is changed
iii) the shape of the resistor is changed
iv) both material and temperature is changed

8. Solid Calcium Oxide reacts vigorously with water to form Calcium Hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium Hydroxide dissolves in water to form its solution called lime water which among the following are true about slaking of lime and the solution formed? 1

a) It is an endothermic reaction
b) It is an exothermic reaction
c) The $P^H$of the resulting solution will be more than 7
d) The $P^H$of the resulting solution will be less than 7

i) a and b ii) b and c
ii) a and d iv) e and d

OR

Which of the following statements about the given reaction are correct?

$3Fe\ (s) + 4H_2O\ (g) \longrightarrow Fe_3O_4\ (s) + 4H_2(g)$.

a) Iron metal is getting oxidized
b) Water is getting reduced
c) Water is acting as reducing agent
d) Water is acting as an oxidizing agent.

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

9. A student sitting in the last bench can read letters written on the black board but not able to read the letters written in his text book. 1

i) The near point of his eyes has receded
ii) The near point of his eyes has come closer to him
iii) The far point of his eyes has come closer to him
iv) The far point of his eyes has receded away

10. On passing excess CO_2 gas through lime water, the milkiness disappears due to the formation of 1

(a) $CaCO_3$ (b) $Ca(HCO_3)_2$
(c) CaO (d) $CaSO_4$ 1

11. Chemical properties depends on

i) Valence shell electronic configuration
ii) Electronic Configuration
iii) Atomic mass
iv) None

12. In the given food chain, suppose the amount of energy at fourth trophic level is 5KJ, what will be the energy available at the producer level? 1

Grass ⟶ Grasshopper ⟶ Frog ⟶ Snake ⟶ Hawk

i) 5 KJ ii) 50 KJ
iii) 500 KJ iv) 5000 KJ

OR

The main cause for abundant Coliform bacteria in the river Ganga is
i) Discharge of effluents from industries.
ii) Washing of clothes on the bank of river
iii) Immersion of ashes of the dead
iv) Disposal of unburnt corpses into a water

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** :It is advisable to add water to acid and not acid to water while stirring the Solution continuously. 1
Reason :The process of dissolving an acid into water is a highly exothermic process.

14. **Assertion** : Alloys are commonly used in electrical heating devices like electrical iron, toasters etc. 1
Reason (R) : Alloys do not oxidize readily at high temperatures.

SECTION–B

15. (i) Write two observations when Ferrous Sulphate crystals are heated in a dry test tube. 3
(ii) Name the type of chemical reaction.
(iii) Write a balanced chemical equation to represent above reactions.

16. 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 sling 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?

17. Three elements A, B and C have atomic number 7, 8 and 9 respectively. 3
i) What would be their positions in the modern periodic table (state group numbers and period number of each)?
ii) Arrange A, B and C decreasing order of their atomic radius.
iii) Which of the three elements is most reactive and why?

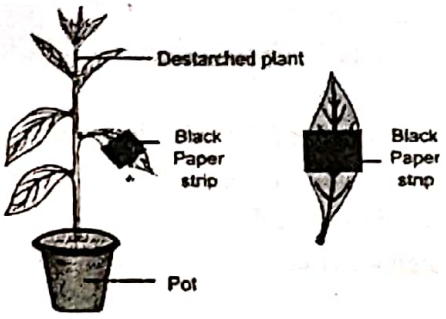
18. i) Create an aquatic food chain showing four trophic levels. 3
ii) Explain biological magnification with the help of food chain.

19. List in tabular form, two distinguishing features between the acquired traits and the inherited traits with one example of each. 3

OR

Distinguish between analogous organs and homologous organs. Identify the analogous and homologous organs among the following.
Potato, sweet potato, leaves of pitcher plant and leaves of cactus.

20. In the experiment on photosynthesis leaf of the plant is covered with a strip as shown. 3



The leaf is plucked strip is removed from it and kept in iodine solution. It is observed that uncovered portion turns blue black, whereas covered portion does not.

i) What is the aim of the experiment?
ii) Give reason for the above observation.
iii) Write the events that takes place during photosynthesis.

21. Is it possible that trait is inherited but may not be expressed? Give a suitable example to justify this statement. 3

22. The linear magnification produced by a spherical mirror is + 3. Analyse this value and state the 3
i) Type of mirror and
ii) Position of the object with respect to the pole of the mirror.
iii) Draw ray diagram to show the formation of image in this case.

OR

i) The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the defect
ii) Why are danger signal lights red in colour?

23. What is a solenoid? Draw the pattern of magnetic field lines of (i) a current carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two field. 3

24. State the principle of working of ocean thermal energy conversion plant. Explain how the plant works. Write one essential condition for it to operate properly. 3

SECTION C

25. i) List two differences between metal and non metal on the basis of their chemical properties.
ii) In the formation of a compound, atom A donates one electron each to two atoms of B. If the atomic numbers of A and B are 12 and 9 respectively, show the electron dot structure of A and B and the formation of the compound. Name the bond formed in the compound. List three properties of the compound formed by bonding. 5

26. 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.

27. i) Name the hormone which is released into the blood when its sugar level rises. Name the organ which produces this hormone and its effect on blood sugar level. Also mention the digestive enzymes secreted by this organ with one function of each. 5
ii) How does the body respond when adrenaline is secreted into the blood?

28. i) Why is DNA copying an essential part of the process of reproductions? Write two advantages of sexual reproduction over asexual reproduction. 5
ii) What are chromosomes? Explain how in sexually reproducing organisms the number of chromosomes in the progeny maintained?

OR

i) Draw neat diagram of human female reproductive system and label the following parts
   a) That produces egg
   b) Site of fertilization
   c) Site of implantation

ii) How does the embryo gets the nutrition inside mother's body.

29. Two lamps are rated 60W at 220V and other 40W at 220V are connected in parallel to the electric supply at 220V. 5

i) Draw a circuit diagram to show the connections?

ii) Calculate the current drawn from the electric supply.

iii) A copper wire has a diameter of 0.5mm and resistivity of 1.6×10^{-8} Ωm. What will be the length of this wire to make its resistance 10Ω?

30. Nupur needs a lens of power – 4.5 D for correction of her vision. 5

i) What kind of defect in vision is she suffering from?

ii) What is the focal length of corrective lens?

iii) Draw a ray diagram showing (a) defective eye (b) correction for this defect.

iv) Write any two causes of this defect.

OR

i) If the image formed by a mirror for all positions of the object placed in front of it is always diminish erect, virtual. State the type of mirror and also draw ray diagram to justify your answer.

ii) Write one use of such mirror.

iii) Define the radius of curvature of spherical mirrors. Find the nature and the focal length of a spherical mirror whose radius of curvature is + 24 cm.