Code no: 086

PRE-BOARD EXAMINATION-1 (DECEMBER– 2019)

CLASS: X **SCIENCE** **Time: 3 hours**

MAX. MARKS: 80

General Instructions:

(i) *The question paper comprises three sections –A, B and C. Attempt all the sections.*

(ii) *All questions are compulsory.*

(iii) *Internal choice is given in each section.*

(iv) *All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.*

(v) *All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 80-90 words each.*

(vi) *All questions in section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.*

(vii) *This question paper consists of a total of 30 questions.*

SECTION A

Answer question numbers 1(a) to (d) on the basis of your understanding of the following paragraph and the related studied concepts.

The electric generator is a machine for producing electric current. The electric generator or dynamo converts mechanical energy into electrical energy.

The generator is an application of electromagnetic induction. It works on the principle that when a wire is moved in a magnetic field, then the current is induced in the coil. A rectangular coil is made to rotate rapidly in a magnetic field between the poles of a horse shoe type magnet. When the coil rotates, it cuts the lines of magnetic force, due to which a current is produced in the generator coil. This current can be used to run the various electrical appliances.

1. (a) Name a device use to convert mechanical energy into electrical energy. (1)

   (b) Define electromagnetic induction. (1)

   (c) By which material does the brushes used in electrical generator is made up of? (1)

   (d) What is the function of commutator? (1)

2. The colored light that refracts most while passing through a prism is

   (i) Yellow (1)
   (ii) Violet
   (iii) Blue
   (iv) Red

3. When a 40V battery is connected across an unknown resistor there is a current of 100 mA in the circuit. Find the value of the resistance of the resistor: (1)

   (i) 5000 Ω
   (ii) 800 Ω
   (iii) 0.8 Ω
   (iv) none of these

4. Point to be kept in mind for verification of Ohm's Law is: (1)

(i) Ammeter and voltmeter should be connected in series
(ii) Ammeter should be connected in series and voltmeter in parallel
(iii) Ammeter should be connected in parallel and voltmeter in series
(iv) Ammeter and voltmeter should be connected in parallel

5. Which method is used to produce electricity in thermal power plant? (1)

(i) By heating chargeable cells
(ii) By boiling water
(iii) By pushing pistons by heat energy
(iv) Any of above

For question number 6, 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 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.

6. **Assertion:** A fuse wire is always connected in parallel with the mainline. (1)
Reason: If a current larger than the specified value flows through the circuit, fuse wire melts.

7. Which of the following will burn with a yellow flame: C_2H_5, OH, C_2H_4 , C_2H_6? (1)

8. What is the modern periodic table called? (1)

9. Which one of the following changes is not oxidation? (1)
(a) Combination
(b) Double displacement
(c) corrosion
(d) Rancidity

10. Identify the acidic salt from the following salts: (1)
(a) potassium sulphate
(b) sodium carbonate
(c) ammonium chloride
(d) sodium chloride

11. Which of the following species does not have electrons equal to 18? (1)
(a) K^+
(b) O^{2-}
(c) k
(d) Ca^{2+}

For question number 12, two statements are given- one labelled Assertion(A) and the other labelled 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 true and R is 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.

12. **Assertion:** Ethylene decolourises bromine water. (1)

Reason: Ethylene is a saturated hydrocarbon

Question numbers 13 (a) to (d) are based on the two tables given below; study these tables and answer the questions that follows:

TABLE A

Normal Haemoglobin count Ranges widely Accepted by Physicians

Age	Haemoglobin
Birth	13.5 to 24.0 g/dl (mean 16.5 g dl)
1 Month	10.0 to 20.0 g/dl (mean 13.9 g/dl)
1 to 2 Months	10.0 to 18.0 g/dl (mean 112 g/dl)
2 to 6 Months	9:5 to 14.0 g/dl (mean 12.6 g
0.5 to 2 years	10.5 to 13.5 g/dl (mean 12.0 g/dl)
2 to 6 years	11.5 to 13.5 g/dl (mean 12.5 g/dl)
6 to 12 years	11.5 to 15.5 g/dl (mean 13.5 g/dl

TABLE B

	Female	Male
12 to 18 years	12.0 to 16.0 g/dl (mean 14.0 g/dl)	13.0 to 16.0 g/dl (mean 14.5 g/dl)
Age > 18 years	12.1 to 15.1 g/dl (mean 14.0 g/dl)	13.6 to 17.7 g/dl (mean 15,5 g/dl

13 (a) Infer the disease which can be diagnosed from the given data in a girl studying in high school and has haemoglobin 8 g/dl? (1)

(b) A student of class 10 likes to eat a diet rich in carbohydrates junk food has been found anemic hence he finds it difficult to concentrate on his studies. To help him out of this situation, name any four foods that he must include in his diet. (1)

(c) A person of 18 years has pale skin feels dizzy after mild exercise and feels very tired. He got his Hb levels tested. His tests may have shown hemoglobin levels. (1)

i) 14>g/dl
ii) <11g/dl
iii) >16g/dl
iv) 17 g/dl

(d) Role of haemoglobin is not to (1)

i) Attach oxygen entering the lungs.
ii) Serve as respiratory pigment
iii) Increase residual volume of our lungs
iv) Attach carbon-dioxide leaving the tissues.

14. Two prepared slides showing stages of reproduction in (i) Amoeba and (ii) yeast were observed by four students P, Q, R and S. The observations as reported by the four students are as follows: (1)

P: Cytokinesis was seen in the yeast cell.

Q: In Amoeba, elongated nucleus was dividing to form two daughter nuclei.

R: A chain of buds was seen due to reproduction in Amoeba.

S: Single cells of Amoeba and yeast were undergoing binary fission and budding respectively.

The correct observations are:

a) P, Q and S
b) P and R only
c) R only
d) Q and S only

SECTION-B

15. If the image formed by a lens for all positions of an object placed in front of it is always erect and diminished, what is the nature of this lens ? Draw a ray diagram to justify your answer. If the numerical value of the power of this lens is 10 D, what is its focal length in the Cartesian system ? (3)

16. (a) What is meant by 'Electrical Resistance' of a conductor? (3)

(b) A wire of length L and resistance R is stretched so that its length is doubled and the area of cross- section is halved. How will its: i) Resistance change? ii) Resistivity change?

17. Explain the formation of rainbow in the sky with the help of a diagram. List the three phenomena of light involved. Which colour – violet or red appears at top of the rainbow? (3)

18. What is an oxidation reaction? Identify in the following reactions: (3)

$ZnO + C \longrightarrow Zn + CO$

(a) the substance oxidised and
(b) the substance reduced.
(c) Is oxidation exothermic or an endo thermic reaction?

19. Identify the compound of Calcium which is yellowish white powder and is used for disinfecting drinking water. Write its chemical Name and formula. How is it manufacture? Write the chemical equation for the reaction involved. Also list two other uses of the compound. (3)

20. (a) Why did Mendeleev have gaps in his periodic table? (3)
(b) State any three limitations of Mendeleev's classification.
(c) How does electronic configurations of atoms change in a period with increase in atomic number?
(d) Differentiate between Mendeleev's periodic Law and modern periodic Law.

21. (a) Explain the phenomenon of 'biological magnification' with the help of an example. (3)

(b) What are biodegradable and non-biodegradable substances?

22. (a) What is reflex action? Explain with the help of example? (3)

(b) What are the major parts of the brain. Give one function of each part.

23. (a) A blue colour flower plant denoted by BB is crossed with that of white colour flower plant denoted by bb. (3)
   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 genotype's BB and Bb in the F_2 progeny?

(b) Explain the terms 'analogous organs' and 'homologous organs' with examples.

24. (a) What are the different types of tropisms? Define each type of tropism. (3)

(b) How do auxins promote the growth of a tendril around a support?

SECTION-C

25. i) What is meant by a 'magnetic field? (5)

ii) How is the direction of magnetic field at a point determined?

iii) Describe an activity to demonstrate the direction of the magnetic field generated around a current carrying conductor.

iv) What is the direction of magnetic field at the centre of a current carrying circular loop?

26. A diverging lens has a focal length of 20cm, at what distance should an object of height 4cm from the optical centre of lens be placed so that it's image is formed 10cm away from the lens. Find the size of the image and draw the ray diagram to show the formation of the image (5)

27. (a) Distinguish between ionic and covalent compounds under the following properties: (5)

(i) Strength of forces between constituent element.

(ii) Solubility of compounds in water.

(iii) Electrical conduction in substance.

(b) How is Magnesium Chloride formed by the transfer of electrons? Why does the solution of $MgCl_2$ conducts electricity?

28. (a) Write a chemical equation in each case to represent the following types of chemical reactions of organic compounds: (5)

i) Oxidation reactions

ii) Addition reactions

iii) Substitution reactions

(b) What is denatured alcohol?

(c) Name the compound formed when ethanol is warmed with ethanoic acid in the presence of Con. H_2SO_4. Draw the structure of the compound.

29. a) Draw and label the parts of the human excretory system. (5)

b) State the function of Bowman's capsule and glomerulus.

c) What are the methods used by plants to get ride of excretory products?

30. Answer the following: (5)

(a) How is zygote formed?

(b) State the function of placenta in the mother's body.

(c) At what interval the egg is formed in human female ovary

(d) Name two STDs caused by bacterial infection.

(e) Why is prenatal sex determination prohibited?