TIME: 3 Hrs. **M.M.: 80**

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 are 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.

SECTION A

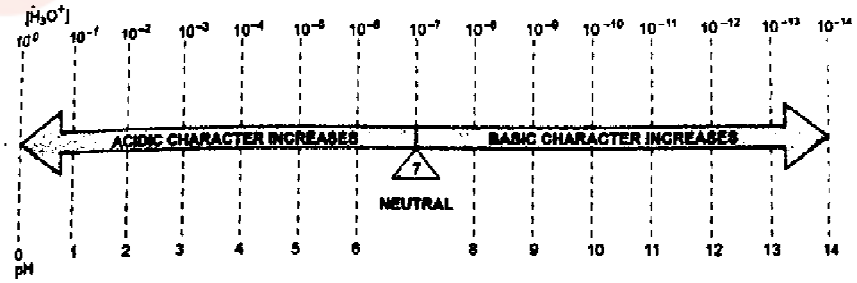
1. What happens when a metal reacts with an acid? 1

Or

Name one characteristic of metals that allows it to be easily flattened into thin sheets.

2. The value of frequency and voltage of the electricity ,supplied to homes in India are 1
   a) 50 Hz और 220 V
   b) 50 Hz और 110 V
   c) 60 Hz और 220 V
   d) 60 Hz और 110 V

3. Refer the given representation of pH scale and answer the following questions - 1x3



   a) What would be the H_3O^+ conc. of a substance having pH of 3.
   b) What would be the nature of the substance having a pH of 11.
   c) Milk goes sour by lactobacillus bacteria if it's pH falls below .....

4. A solar cell : 1
   a) First converts solar energy into heat energy and then to electricity.
   b) First converts solar energy into light energy and then to electricity.
   c) Converts solar energy into electricity.
   d) First converts solar energy into magnetic energy and then to electricity.

5. Look at the picture and answer the given questions - 1x3

The gland shown in the picture is a small butterfly-shaped gland found at the base of the neck, This gland makes a hormone that travels in blood to all parts of our body and regulates carbohydrate, protein and fat metabolism in the body so as to provide the best balance for growth .This hormone also controls body's metabolism in many ways

a) Which gland is referred to in the given picture? What type of a gland is this?
b) What does this gland secrete?
c) Name the disease caused due to the deficiency of the hormone secreted by this gland.

6. The S.I. Unit of resistivity is 1
   a) Ohm metre^2
   b) Ohm
   c) Volt / ampere
   d) Ohm metre

7. Assertion (A) : We should not consider "wood " as a renewable source of energy . 1
   Reason (R) **:** Once it is used up it takes a very long time to become available again.
   a) Both A and R are true and R is the correct explanation of A .
   b) Both A and R are true and R is not the correct explanation of A .
   c) A is true but R is false .
   d) A is false but R is true

8. The major green house gas is 1
   a) CO
   b) CO_2
   c) SO_2
   d) NO_2

9. Sustainable development refers to- 1
   a) Planned development with minimum damage to environment.
   b) Only conservation of environment or natural resources
   c) Planned development acceptable to all stakeholders
   d) Both a and c

10. The process in which the pollen grains are received by the stigma of the same flower ,is called 1
    a) Syngamy
    b) Self pollination
    c) Fertilization
    d) Cross pollination

OR

The fertilized egg or zygote of human being gets implanted in the
   a) Ovary
   b) Fallopian tube
   c) Uterus
   d) Both (a) and (c)

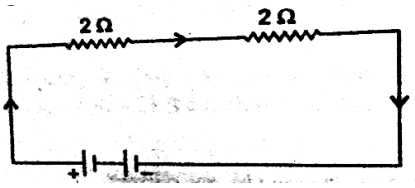
11. Assertion (A): A rectangular iron rod has been magnetised by keeping it in a uniform magnetic field.
Reason (R) **:** A magnetic field can be produced by a straight current carrying wire. 1

a) Both A and R are true and R is the correct explanation of A .
b) Both A and R are true and R is not the correct explanation of A .
c) A is true but R is false .
d) A is false but R is true

12. A. The amount of heat(H) produced in a resistor(R)carrying a current (I) and having a potential difference (V) across it ,in a time(t) ,is given by the formula - 1

a) $H = V^2Rt$
b) $H = VIRt$
c) $H = VIt$
d) $H = I^2/ Rt$

12 B.Calculate the current flowing in the given circuit having a battery of 6V. 1
दिये गए विद्युत परिपथ जिसमें 6V की बैटरी संलग्न है ,में प्रवाहित धारा का परिकलन कीजिए ।



13. Name the natural phenomenon by which sky appears blue. 1

Or

What type of lens can correct the defect of hypermetropia?

14. A.What is the trend in atomic radii down a group ? 1

14 B.Which of the following set of elements is written in order of their increasing metallic character? 1

a) Be Mg Ca
b) Na Li K
c) Mg Al Si
d) C O N

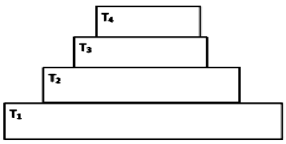
Section B

15. A student writes the balanced chemical equation for the reaction of magnesium with nitrogen as follows….. 3

$$3\ Mg + 2\ N \longrightarrow Mg\ N_2.$$

a) What is wrong in this equation?
b) Write the correct balanced equation.
c) Write the physical states of both reactants and product.

16. Answer the given questions by careful observing the pyramid 3



a) State the trophic levels which has maximum and minimum amount of energy.
b) What is the percentage of the solar energy utilized by the plants.
c) What is the direction of flow of energy?

17. Based on the group valency suggest the formulae for- 3
a) Oxides of group 1 elements
b) Halides of group 13 elements
c) Hydrides of group 15 elements

Or

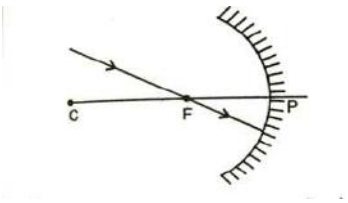
The following table shows part of the periodic table with some elements which are not their chemical symbols answer the following questions using this information…

1																	18
	2											13	14	15	16	17	
														R	**D**		**F**
		3	4	5	6	7	8	9	10	11	12					**E**	
A																	
							C										
	B																

a) Which element will form a divalent cation?
b) Write the formula of the compound formed by the reaction between A and D.
c) How many bonds are present in the molecule R_2 ?Name the type of bond present in this molecule ?

18. A. The rays parallel to the Principal axis of a spherical mirror, actually meet at a point 15 cm distant from its pole . Identify the mirror and write its focal length. 3

B. The following diagram shows a ray incident on a concave mirror. Draw the path of the ray after the reflection .



19. How do Auxin promote the growth of a tendril around a support? 3

20. A. Rahul had been collecting copper coins and silver coins. One day he observed a green coating on copper coins and a black coating on silver coins. 3
a) State the chemical phenomenon responsible for these coatings .
b) write the chemical names of each coating.

B. In the given reaction Identity which one is getting oxidised and reduced.

$$MnO_{2\,(s).} + 4\,HCl_{(aq).} \longrightarrow MnCl_{2(aq)} + Cl_{2(g)} + H_2O_{(aq)}$$

21. Compare alveoli in the lungs and nephrons in the kidneys with respect to their structure and functioning.(any 3 points) 3

22. Answer the following: 3

A .How are the wings of a bat different from the wings of a bird ?

B. In human beings, the probability of getting either male or female child is 50:50. Give a suitable explanation.

Or

A. Why did the tailless mice not produce a tailless mice progeny?

B. What is the major source of in built tendency of variation during reproduction?

23. Name the part of the eye that 3

a) Controls the amount of light entering the eye.
b) Determines the colour of the eye.
c) Holds the eye lens in its position.

24. A. Draw graphs to show the nature of variation of 3

a) A direct current
b) An alternating current with time

B. Give the name of one source of each of these types of current.

Or

Under what conditions permanent electromagnet is obtained if a current carrying solenoid is used ? Support your answer with the help of a labelled circuit diagram.

Section C

25. A. What happens when Steam is passed over red hot iron also Write its chemical equations 5

B. Give reason why:

a). A piece of calcium metal when dropped in water, the gas evolved do not catch fire.

b). Metals when react with nitric acid do not produce H_2 gas.

C. What changes take place when an ore of mercury is heated in air for a long time? Write the name of the ore of mercury and the reaction involved in this process.

26. Draw ray diagrams showing the image formation by a convex lens when an object is placed 5

a) Between optical centre and focus of the lens
b) Between focus and twice the focal length of the lens
c) At twice the focal length of the lens
d) At infinity
e) At the focus of the lens

OR

A. A child is standing in front of a magic mirror . She finds the image of her head bigger , the middle portion of her body is of the same size and the legs smaller . Write the order of combination of mirror from top to bottom. Give reason for your answer.

B. Name the type of mirror used in the following situation, Give reasons for the same.

a) Headlight of a car
b) Side/ rear view mirror of a vehicle

27. Answer these questions : 5

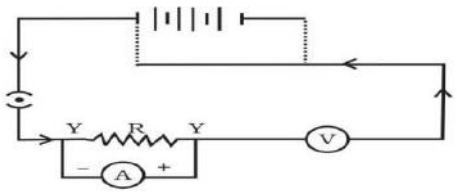
A. Derive the relation of commercial unit of electric energy with S.I. Unit of energy .

B. .An electric bulb is rated as 100 W,220V . It is used for 5 hours daily Calculate

a) It's resistance while glowing

b) Energy consumed in kWh per day

C. A child has drawn the electric circuit to study Ohm's law .The teacher told that the circuit diagram needs correction. Study the diagram and redraw it after making corrections.



28. Answer the following questions : 5

a) Name the process which fulfils the carbon and energy requirement of autotrophic organisms, also write its chemical reaction.

b) Write the three events occurring during this process .

29. Answer the following questions: 5

a) How many bonds are formed between two atoms when the total number of shared elections is six ?

b) What will be the formula and electron dot structure of Ethene?

c) Write the three allotropes of carbon.

d) Write the functional group present in Propanone.

Or

A. How many structural isomers can you draw for pentane ?

B. How can ethanol and ethanol acid be differentiated on the basis of their chemical properties? (only one)

C. What happens when ethanol reacts with ethanol acid in presence of sulphuric acid ?

30. Answer the following :

A. In tobacco plant, the Male gametes have 24 chromosomes.What is the number of chromosomes in the female gamete and Zygote both ? 5

B. Draw a labelled diagram of Human female reproductive System.

Or

A. Why does bread mould grow profusely on a moist slice of bread rather than on a dry slice of bread?

B. Name the organism in which binary fission occurs in a definite orientation than others. Draw different stages of binary fission shown by this organism.

C. Complete the diagram D and E by indicating the regenerated regions in Planeria .