SNS ACADEMY

FULL PORTION SCIENCE

10th Standard

Science

Exam Time : 02:30:00 Hrs

Total Marks : 80

SECTION A1

16 x 1 = 16

1) When carbon dioxide is passed through lime water

 (a) calcium hydroxide is formed   (b) white precipitate of CaO is formed   (c) lime water turns milky

 (d) colour of lime water disappears

2) As seen in the figure, two nails are carefully dipped in copper sulphate solution with the help of threads. What will happen when the nails are removed after half an hour?
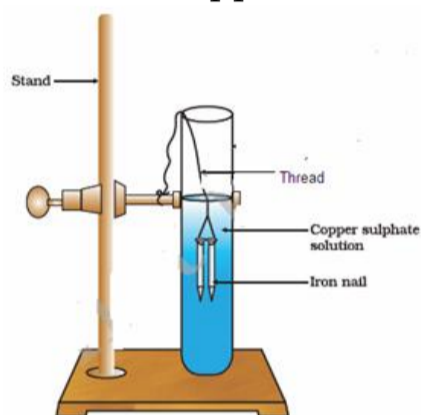
 (a) No change is observed   (b) Nails turn blue in colour   (c) Nails turn green in colour

 (d) Nails turn brown in colour

3) An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?

 (a) Baking powder   (b) Lime   (c) Ammonium hydroxide solution   (d) Hydrochloric acid

4) A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue?

 (a) Lemon juice   (b) Vinegar   (c) Common salt   (d) An antacid

5) Which of the following properly is generally not shown by metals?

 (a) Electrical conduction   (b) Sonorous in nature   (c) Dullness   (d) Ductility

6) 2 ml each of concentrated HCl, HNO_3 and a mixture of concentrated HCl and concentrated HNO_3 in the ratio of 3 : 1 were taken in test tubes labelled as A, B and C. A small piece of metal was put in each test tube. No change occured in test tubes A and B but the metal got dissolved in test tube C respectively. The metal could be

 (a) Al   (b) Au   (c) Cu   (d) Zn

7) Lymph carries

 (a) Digested food   (b) Absorbed food   (c) Digested and absorbed food   (d) Water

8) Involuntary actions in the body are controlled by

 (a) Medulla in forebrain   (b) Medulla in midbrain   (c) Medulla in hindbrain

 (d) Medulla in spinal cord

9) In all the electrical appliances, the switches are put in the

 (a) live wire   (b) earth wire   (c) neutral wire   (d) none of the above

10) Bromine reacts with saturated hydrocarbon at room temperature in the

 (a) absence of sunlight   (b) presence of wate   (c) presence of sunligh

 (d) presence of hydrochloric acid

11) In this list of organisms given below, those that reproduce by the asexual method are
(i)banana
(ii)dog
(iii)yeast
(iv)amoeba

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

12) The process where the unfertilised egg is released out of the body with the blood used to nourish the embryo is known as

(a) Menstruation   (b) Fertilisaytion   (c) Germination   (d) Pollination

13) The theory of evolution of species by natural selection was given by

(a) Mendel   (b) Darwin   (c) Morgan   (d) Lamarck

14) Wild cabbage is being cultivated for thousands of years and humans have generated broccoli, cauliflower, kala etc. from it. This is an example of

(a) Natural selection   (b) Genetic drift   (c) Geographic isolation   (d) Artificial selection

15) The radius of curvature and focal length of a concave mirror are

(a) positive   (b) negative   (c) both   (d) none of these

16) Which of the following is the formula of ozone

(a) O_3 (b) O_2 (c) O_4 (d) O_6

SECTION A2   4 x 1 = 4

17) **Assertion:** Sodium carbonate pentahydrate is also known as washing soda.
Reason: Chief raw materials for the manufacture of washing soda are NH_3, NaCI and $CaCO_3$.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

18) **Assertion:** The communication in animals is due to the electrical impulse and chemical communication.
Reason: The communication caused due to chemicals is very slow.
Codes
(a) If both assertion and reason are true and the reason is correct explanation of assertion.
(b) If both assertion and reason are true but reason is not a correct explanation of assertion.
(c) If assertion is true and reason is false.
(d) If both assertion and reason are false.

19) **Assertion:** If mother has two dominant alleles for black hair and father has two recessive alleles for blonde hair then their child will inherit one dominant allele from mother and one recessive allele from father and will have black hair.
Reason: Progeny inherits one genes for each trait from its parents but the trait shown by progeny depends on inherited alleles.
Codes:
(a) Both A and R are true and R is correct explanation of the assertion
(b) Both A and R are true but R is not the correct explanation of the assertion
(c) A is true but R is false
(d) A is false but R is true.

20) **Assertion:** The scattered light makes path of light visible.
Reason: Scattering of light is the result of Tyndall effect.
Codes
(a) Both A and R are true, and R is correct explanation of the assertion.
(b) Both A and R are true, but R is not the correct explanation of the assertion.
(c) A is true, but R is false.
(d) A is false, but R is true.

SECTION B   6 x 2 = 12

21) You might have seen lemon or tamarind juice being used to clean tarnished surface of copper vessels. Explain why these sour substances are effective in cleaning the vessels?

22) Name the correct substrates for the following enzymes
(a)Trypsin (b)Amylase
(c)Pepsin   (d)Lipase

23) What is an impulse?

24) What is the difference between AC generator and DC generator?

25) List the function of human female reproductive system.

26) With the help of a ray diagram show how a pencil appears when dipped in water.

SECTION C   7 x 3 = 21

27) Blue crystals of copper sulphate on heating in a dry test tube become colourless. Give reasons.

28) (a) Show on a diagram the transfer of electrons between the atoms in the formation of MgO.
(b) Name the solvent in which ionic compounds are generally soluble.
(c) Why are aqueous solutions of ionic compounds able to conduct electricity?

29) How 'respiration' different from 'breathing'? Explain the processes of 'aerobic' respiration and 'anaerobic' respiration.

30) You are given 3 resistors each of 3 ohm and you are asked to get all possible values of resistance when you connect them in different combinations. How many values of resistance can you get?

31) Name the materials used to make atelectromagnet. Explain how you can make one in the lab.

32) Explain the following:
(a) Speciation (b) Natural Selection

33) If the speed of light in water is 2.25×10^8 m/s and the speed in vacuum is 3×10^8 m/s. Calculate the refractive index of water.

SECTION D   3 x 4 = 12

34) A compound, X of sodium forms a white powder. It is a constituent of baking powder and is used in some antacids. When heated it gives a compound, Y which is anhydrous and absorbs water to become a hydrated salt. When this salt is kept in open air, it loses water molecules in a process called efflorescence. When dissolved in water it forms a strong base and a weak acid, Z.
(i) What is the compound, X?
(a) NaHCO$_3$ (b) Na$_2$CO$_3$ (c) NaOH   (d) NaCl
(ii) The compound, Y is
(a)   (b)   (c)   (d)
NaHCO^3 Na$_2$CO$_3$ Na$_2$CO$_3$ 10H$_2$O   NaCI
(iii) What is the nature of the solution formed by dissolving Y in water?
(a)   (b)   (c)   (d) It remains
Alkaline   Acidic   Neutral   insoluble
(iv) Identify the compound, Z.
(a) CO$_2$ (b) H$_2$CO$_3$ (c) NaOH   (d) H$_2$O
(v) Sodium carbonate is a basic compound because it is a salt of a
(a) strong acid and   (b) weak acid and
strong base   weak base
(c) strong acid and   (d) weak acid and
weak base   strong base

35) The rate of flow of charge is called electric current. The SI unit of electric current is Ampere (A). The direction of flow of current is always opposite to the direction of flow of electrons in the current.

The electric potential is defined as the amount of work done in bringing a unit positive test charge from infinity to a point in the electric field. The amount of work done in bringing a unit positive test charge from one point to another point in an electric field is defined as potential difference.

$$V_{AB} = V_B - V_A = \frac{W_{BA}}{q}$$

The SI unit of potential and potential difference is volt.

(i) The 2 C of charge is flowing through a conductor in 100 rns, the current in the circuit is

(a) 20 A   (b) 2 A

(c) 0.2 A   (d) 0.02 A

(ii) Which of the following is true?

(a) Current flows from positive terminal ofthe cell to the negative terminal of the cell outside the cell.

(b) The negative charge moves from lower potential to higher potential.

(c) The direction of flow of current in same as the direction of flow of positive charge.

(d) All of these

(iii) The potential difference between the two terminals of a battery, if 100 joules of work is required to transfer 20 coulombs of charge from one terminal of the battery to other is

(a) 50 V   (b) -5 V

(c) 0.5 V   (d) 500 V

(iv) The number of electrons flowing per second in a conductor if 1A current is passing through it

(a) 6.25×10^{20} (b) 6.25×10^{19}

(c) 6.25×10^{18} (d) 6.25×10^{-19}

(v) The voltage can be written as

(a) Work done x charge x time   (b) $\frac{\text{Work done}}{\text{Current} \times \text{time}}$

(c) $\frac{\text{Work done} \times \text{time}}{\text{Current}}$ (d) Work done x charge

36) An ecosystem may be defined as a structural and functional unit of the biosphere comprising living organisms and their non-living environment which interact by means of food chains and biogeochemical cycles resulting in energy-flow, biotic diversity and material cycling to form a stable, self-supporting system.

(i) The two basic processes involved in an ecosystem are

(a) cycling of materials and food chains

(b) energy flow and self-sustainability

(c) carbon cycle and biotic diversity

(d) cycling of materials and flow of energy.

(ii) Which among the following is not an artificial ecosystem?

a) Orchard (b) Lake (c) Aquarium (d) Cropland

(iii) The role of fungi and bacteria in an ecosystem is to

(a) increase the supply of nutrients

(b) increase the supply of energy

(c) release nutrients from dead organic matter

(d) increase the amount of CO_2 in the atmosphere.

(iv) What would one of the likely result if all decomposers in a particular ecosystem were wiped out?

(a) The atmospheric reservoir of carbon dioxide would decline.

(b) More food would be available for other consumers in the ecosystem.

(c) The other organisms in the ecosystem would experience lower death rates.

(d) There would be no significant impact, as dead organic matters would spontaneously decompose.

(v) Which of the following holds true for an ecosystem?

(a) Primary consumers are least dependent upon producers.

(b) Primary consumers most of the time out number producers.

(c) Organic substances such as carbon, nitrogen and oxygen constitute the main abiotic components.

(d) Permanent ecosystems are self-supporting natural ecosystems that maintain themselves for relatively long duration.

SECTION E (EITHER OR TYPE) CHE 1,2 BIO 3,5 PHY 4,6   6 x 5 = 30

37) (i) Explain why is hydrochloric acid a strong acid and acetic acid, a weak acid. How can it be verified?
(ii) Explain why aqueous solution of an acid conducts electricity.
(iii) You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7.
(a) Identify the most acidic and most basic solutions.
(b) Arrange the above four solutions in the increasing order of H^+ ion concentration.
(c) State the change in colour of pH paper on dipping in solution C and D.

38) With the help of a suitable example, explain how ionic compounds are formed. State any three general properties of ionic compounds.

39) What is phototropism? How does it occur in plants? Describe an activity to demonstrate phototropism

40) (a) Explain why there are two separate circuits one for high power rating appliances and other for low power rating appliances.
(b) A domestic circuit has SA fuse. How many bulbs of rating 100 W, 220 V can be safely used in this circuit? Justify your answer.

41) What are the various artificial methods of vegetative propagation in plants

42) Name three refractive defects of vision with the help of diagram. Explain the reasons and correction of these defects.

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