



FULL PORTION TEST NO. 1

Class 10 - Science

Time Allowed: 3 hours

Maximum Marks: 80

General Instructions:

1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

Section A

1. Name the passage that leads bile from the liver into the gall bladder. [1]
a) Colon b) Cystic duct
c) Caecum d) Rectum
2. A cross between a tall plant (TT) and short pea plant (tt) resulted in progeny that were all tall plants because [1]
a) height of pea plant is not governed by gene b) tallness is the dominant trait
 'T' or 't'
c) tallness is the recessive trait d) shortness is the dominant trait
3. In an ecosystem, the 10% of energy available for transfer from one trophic level to the next trophic level is in the form of: [1]
a) Chemical energy b) Heat energy
c) Mechanical energy. d) Light energy
4. Match the following with correct response. [1]

Column A	Column B
(i) Central nervous system	(a) Brain
(ii) Peripheral nervous system	(b) Sympathetic nervous system
(iii) Autonomic nervous system	(c) Cranial and spinal nerves
(iv) Reflex action	(d) Reflex arc

- a) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a) b) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d)
- c) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) d) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b)
5. Abiotic components of the ecosystem are: [1]
a) Inorganic substances b) Decomposers

- c) Both Inorganic substances and climatic factors d) Climatic factors
6. Which of the following is the correct statement regarding bile? [1]
- a) Secreted by liver and stored in gall bladder b) Secreted by liver and stored in bile duct
- c) Secreted by bile duct and stored in liver d) Secreted by gall bladder and stored in liver
7. In plants the role of cytokinin is: [1]
- a) Promote the opening of stomatal pore. b) Help in the growth of stem.
- c) Wilting of leaves. d) Promote cell division.
8. **Assertion (A):** Regeneration is getting a full organism back from its body parts. [1]
Reason (R): In grafting, the stock is placed over the scion.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.
9. **Assertion (A):** Man is a herbivore. [1]
Reason (R): Omnivores eat both plant food and meat of animals.
- a) Both A and R are true and R is the correct explanation of A. b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true.
10. Differentiate sepal and petal. [2]
11. What is the role of decomposers in the ecosystem? [2]
- OR
- a. Define ecosystem.
- b. Autotrophs are at the first level of food chain. Give reason.
- c. In a food chain of frogs, grass, insects and snakes assign trophic level to frogs. To which category of consumers do they belong to?
12. How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light? [2]
13. A green stemmed tomato plant denoted by (GG) is crossed with a tomato plant with purple stem denoted by (gg). [3]
- a. What colour of the stem would you expect in their F_1 progeny?
- b. In what ratio would you find the green and purple coloured stem in plants of F_2 progeny?
- c. What conclusion can be drawn for the above observations?
14. Can you, design any other experiment set-up for testing that CO_2 is produced during respiration? [3]
15. **Read the following text carefully and answer the questions that follow:** [4]
 The mechanism by which the sex of an individual is determined is called sex-determination. In human beings, sex of a newborn is genetically determined, whereas in some others it is not. There are 46 (23 pairs) chromosomes in human beings. Out of these, 44 (22 pairs) control the body characters and 2 (one pair) are known as sex chromosomes. The sex chromosomes are of two types-X chromosome and Y chromosome. At the time of fertilisation, depending upon which type of male gamete fuses with the female gamete, the sex of the newborn child is decided.

- i. What is the statistical probability of getting either a male or a female child? Justify your answer. (1)
- ii. Out of male or female, which of them has a perfect pair of sex chromosomes? In case of a perfect pair, will the gametes produced be of the same kind or of a different kind? (1)
- iii. Name two animals whose sex is not genetically determined. Explain the process of their sex determination. (2)

OR

With the help of a flowchart only, show how sex is genetically determined in human beings. (2)

16. i. In the female reproductive system of human beings, state the functions of [5]
 - a. ovary
 - b. oviduct
- ii. Mention the changes which the uterus undergoes, when
 - a. it has to receive a zygote.
 - b. no fertilization takes place.
- iii. State the function of placenta.

OR

Explain briefly movements in plants.

Section B

17. Sodium hydrogencarbonate when added to acetic acid evolves a gas. Which of the following statements are true [1] about the gas evolved?
 - i. It turns lime water milky
 - ii. It extinguishes a burning splinter
 - iii. It dissolves in a solution of sodium hydroxide
 - iv. It has a pungent odour
 - a) (i) and (iv)
 - b) (ii), (iii) and (iv)
 - c) (i) and (ii)
 - d) (i), (ii) and (iii)
18. Soap doesn't work well with woollen garments because: [1]
 - A. It is basic in nature and woollen garments have acidic dyes.
 - B. It is acidic in nature and woollen garments have basic dyes.
 - a) (A)
 - b) (B)
 - c) None of these
 - d) Both (A) and (B)
19. Alloys are homogeneous mixtures of a metal with a metal or nonmetal. Which among the following alloys [1] contain non-metal as one of its constituents?
 - a) Brass
 - b) Bronze
 - c) Steel
 - d) Amalgam
20. Match the following with the correct response: [1]

Column A	Column B
(i) Ionic bond	(a) NH_3
(ii) Polar covalent bond	(b) C_{60}

(iii) Non-polar bond	(c) N_2
(iv) Fullerene	(d) NaCl

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

21. Aluminum is used for making cooking utensils. Which of the following properties of aluminum are responsible for the same? [1]



- i. Good thermal conductivity
ii. Good electrical conductivity
iii. Ductility
iv. High melting point

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

22. A few chemical processes are listed as: [1]

- i. An alcohol undergoes oxidation to produce a carboxylic acid.
ii. An alcohol undergoes esterification.
iii. A carboxylic acid reacts with sodium carbonate.
iv. Propane undergoes complete combustion.

In which of the given process(es), products have more carbon atoms than the underlined reactants?

- a) I and IV only b) I, III and IV only
c) II only d) I and II only

23. An aqueous solution **A** turns phenolphthalein solution pink. On addition of an aqueous solution **B** to **A**, the pink colour disappears. The following statement is true for solution **A** and **B**. [1]

- a) A has pH greater than 7 and B has pH less than 7. b) A is strongly basic and B is a weak base.
c) A is strongly acidic and B is a weak acid. d) A has pH less than 7 and B has pH greater than 7.

24. **Assertion (A):** Sodium carbonate pentahydrate is also known as washing soda. [1]

Reason (R): Chief raw materials for the manufacture of washing soda are NH_3 , NaCl and $CaCO_3$.

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

25. What happens when zinc granules are added to dil NaOH solution? Also write the chemical equation for the reaction. [2]
26. 2g of silver chloride is taken in a china dish and the china dish is placed in sunlight for some time. What will be your observation in this case? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction. [3]

OR

State one characteristic each of the chemical reaction which takes place when:

- Dilute hydrochloric acid is added to sodium carbonate.
 - Lemon juice is added gradually to potassium permanganate solution.
 - Dilute sulphuric acid is added to the barium chloride solution.
 - Quick lime is treated with water.
 - Wax is burned in the form of a candle.
27. A group of students looked at different metals and metal sulphate solutions given in a tabular form. From the data, answer the following: [3]

Metal	Metal sulphate solution	Colour
Chromium	Chromium sulphate	Green
Cobalt	Cobalt sulphate	Pink
Copper	Copper sulphate	Blue
Magnesium	Magnesium sulphate	Colourless

- Which metal reacts with all other sulphate solutions?
 - Which metal did not react with any other metal sulphate solution?
 - Arrange the metals in decreasing order of reactivity.
28. **Read the following text carefully and answer the questions that follow:** [4]

When the fats and oil present in the food material get oxidized by the oxygen (of air), their oxidation products have unpleasant smells and tastes. Due to this taste of food material containing fats and oil change and become very unpleasant. The condition produced by aerial oxidation of fats and oils in food marked by unpleasant smell and taste is called rancidity. Rancidity spoils the food material prepared in the fats and oils which have been kept for a considerable time and makes them unfit for eating.

The development of rancidity in food can be prevented in the following ways-

- Rancidity can be prevented by adding an antioxidant to foods containing fats and oils.
- Rancidity can be prevented by packaging fat and oil-containing food in Nitrogen gas.
- Rancidity can be prevented by keeping food in a refrigerator.

- What do you understand by oxidation? (1)
- How does the food become rancid? (1)
- How can we prevent the rancidity of food? (2)

OR

Which type of food material gets spoiled by the phenomenon of rancidity? (2)

29. Write the structural formulae of all the isomers of hexane. [5]

OR

- What are hydrocarbons? Give examples.

- ii. Give the structural differences between saturated and unsaturated hydrocarbons with two examples each.
- iii. What is functional group? Give examples of four different functional groups.

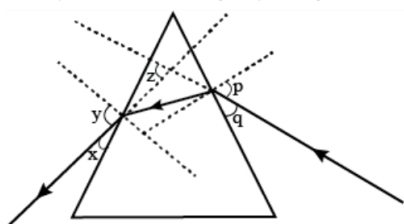
Section C

30. A real image is formed by the light rays after reflection or refraction when they:
- A. actually meet or intersect with each other.
- B. actually converge at a point.
- C. appear to meet when they are produced in the backward direction.
- D. appear to diverge from a point.

Which of the above statements are correct?

- a) (A) and (B)
- b) (B) and (D)
- c) (B) and (C)
- d) (A) and (D)

31. Study the following ray diagram [1]



In this diagram, the angle of incidence, the angle of emergence and the angle of deviation respectively have been represented by:

- a) p, y, z b) y, p, z
c) x, q, z d) p, z, y

32. **Assertion (A):** Safety fuses are made up of materials having a low melting point. [1]

Reason (R): Safety fuses should be resistant to electric current.

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

33. A person with myopic eye cannot see objects beyond 1.2metre distinctly. What should be the nature of corrective lenses to restore proper vision? [2]

34. An electric motor takes 5A from a 220V line. Determine the power of the motor and the energy consumed in 2 h. **[2]**

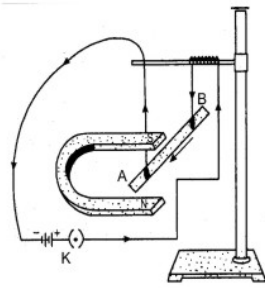
OR

You have two circuits:

- (i) a 6V battery is series with 1Ω and 2Ω resistors
- (ii) a 4V battery in parallel with 12Ω and 2Ω . resistors

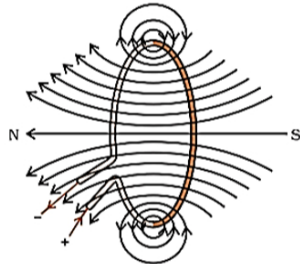
Compare the power used in 2Ω resistor in each case.

35. In activity shown, how do you think the displacement of rod AB will be affected [3]



- i. if the current in rod AB is increased
- ii. a stronger horse shoe magnet is used

36. Why do different rays deviate differently in the prism? [3]
37. Magnetic field lines of the field produced by a current-carrying circular loop are shown in the figure. [3]



By analyzing the concept of magnetic field and magnetic field lines answer the following questions:

- i. How is the direction of the magnetic field at a point determined?
- ii. What is the direction of the magnetic field at the centre of a current-carrying circular loop?

38. **Read the following text carefully and answer the questions that follow:** [4]

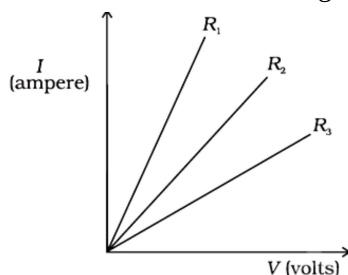
In 1827, a German physicist Georg Simon Ohm (1787-1854) found out the relationship between the current I , flowing in metallic wire and the potential difference across its terminals. He stated that the electric current flowing through a metallic wire is directly proportional to the potential difference V , across its ends provided its temperature remains the same.

The resistance of a circuit is defined as the ratio between the voltage applied to the current flowing through it.

Rearranging the above relation,

$$R = \frac{V}{I}$$

Electric charge flows easily through some materials than others. The electrical resistance measures how much the flow of this electric charge is restricted within the circuit.



- i. What is the unit of electrical resistance? (1)
- ii. Define Ohm's law. (1)
- iii. From graph which resistance have high resistance? (2)

OR

What does the slope of V-I graph at any point represent? (2)

39. A concave lens of focal length 60 cm is used to form an image of an object of length 9 cm kept at a distance of 30 cm from it. Use lens formula to determine the nature, position and length of the image formed. Also draw [5]

labelled ray diagram to show the image formation in the above case.

OR

A student focussed the 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 Position of candle = 12.0 cm Position of convex lens = 50.0 cm Position of the screen = 88.0 cm

- i. What is the focal length of the convex lens?
- ii. Where will the image be formed if he shifts the candle towards the lens at a position of 31.0 cm?
- iii. What will be the nature of the image formed if he further shifts the candle towards the lens?
- iv. Draw a ray diagram to show the formation of the image in case (iii) as said above.