

PRACTICE TEST-4
Class 10 - Science

Time Allowed: 3 hours

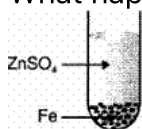
Maximum Marks: 80

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
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.
3. Section A consists of 20 objective-type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. What happens in the test tube shown here? [1]



- a) H₂O will produce b) SO₂ will produce
 c) No reaction d) FeO will produce
2. A student wrote three statements about rancidity : [1]
 i. When fats and oils are reduced, they become rancid.
 ii. Chips manufacturers usually flush chips bags with oxygen to prevent rancidity.
 iii. Rancidity is prevented by adding substances called antioxidants to food.
 a) Statement (i), (ii) and (iii) b) Statement (i) and (iii) only
 c) Statement (i) only d) Statement (iii) only
3. The following pairs of substances are available in the laboratory: [1]
 A. Zinc and dilute hydrochloric acid
 B. Zinc and dilute sodium hydroxide solution
 C. Sodium bicarbonate and dilute hydrochloric acid
 Which of these can be used to produce a colourless and odourless gas which gives a pop sound on burning?
 a) A and B b) A and C
 c) A only d) B only
4. Sodium bicarbonate solution is added to dilute ethanoic acid. It is observed that [1]
 a) the mixture becomes light yellow b) the mixture becomes warm
 c) a solid settles at the bottom d) a gas evolves
5. During smelting, an additional substance is added which combines with impurities to form a fusible product known as: [1]



- a) Flux
- b) Slag
- c) Gangue
- d) Mud

6. The ability of metals to be drawn into thin wire is known as [1]

- a) conductivity
- b) malleability
- c) ductility
- d) sonorosity

7. Oils on treating with hydrogen in the presence of palladium or nickel catalyst form fats. This is an example of [1]

- a) Addition reaction
- b) Displacement reaction
- c) Oxidation reaction
- d) Substitution reaction

8. To set-up the experiment to show that light is necessary for photosynthesis, experimental leaves should be taken for use from [1]

- a) Any flowering plant
- b) Newly emerged sapling
- c) Starched potted plant
- d) Destarched potted plant

9. Iodine is necessary for the synthesis of which hormone? [1]

- a) Thyroxin
- b) Insulin
- c) Adrenaline
- d) Auxin

10. In Rhizopus, tubular thread-like structures bearing sporangia at their tips are called [1]

- a) filaments
- b) roots
- c) rhizoids
- d) hyphae

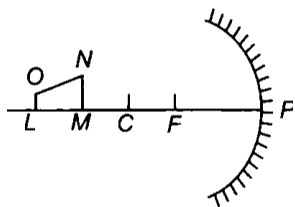
11. Select the group which shares maximum number of common characters- [1]

- a) two genera of a family
- b) two individuals of a species
- c) two species of a genus
- d) two genera of two families

12. What is correct about human kidney? [1]

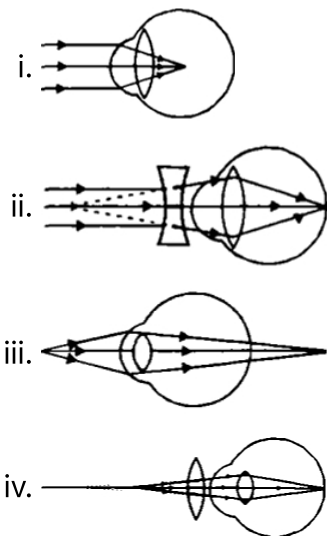
- a) Each kidney has 2 ureters
- b) It is cylindrical
- c) It has 100 nephrons
- d) It is bean shaped

13. An object LMNO is placed in front of a concave mirror beyond the centre of curvature C as shown in figure. Which of the following is correct regarding the shape of the image? [1]



- a) $|m_{LO}| < |m_{MN}|$ b) $|m_{LO}| < 1$ and $|m_{MN}| < 1$
c) Both $|m_{LO}| < 1$ and $|m_{MN}| < 1$ and $|m_{LO}| < |m_{MN}|$ d) $|m_{LO}| > |m_{MN}|$

14. Figures (a), (b), (c) and (d) respectively correspond to [1]



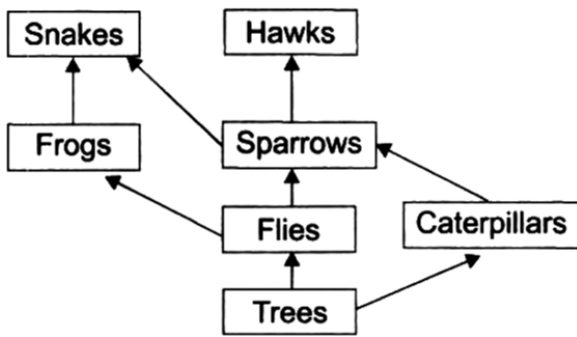
- a) The short-sighted eye, the correction of short-sightedness, the long-sighted eye and the correction of long-sightedness b) The long-sighted eye, the correction of short sightedness, the short-sighted eye and the correction of long-sightedness
c) The short-sighted eye, the correction of long-sightedness, the long-sighted eye and the correction of short-sightedness d) None of these

15. Which group(s) of organisms is/are not a constituent of a food chain? [1]

- A. Grass, lion, rabbit, wolf
B. Plankton, man, fish, grasshopper
C. Wolf, grass, snake, tiger
D. Frog, snake, eagle, grass, grasshopper

- a) B and D b) All of these
c) B and C d) A and C

16. The given figure shows a food web in a forest area. In the forest, large amount of insecticides are blown with wind from a nearby field. What will be the effect on the given food web? [1]



- a) Greater reduction in the number of caterpillars than in the number of flies
- b) Reduction in the number of hawks and snakes
- c) Increase in the number of frogs
- d) Increase in the number of sparrows

17. **Assertion (A):** Magnesium ribbon keeps on burning in atmosphere of nitrogen. [1]

Reason (R): Magnesium reacts with nitrogen to form magnesium nitride and this reaction is combination reaction.

- 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.

18. **Assertion (A):** Copper -T can be used as a contraceptive method. [1]

Reason (R): It prevents from sexually transmitted disease.

- 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.

19. **Assertion (A):** Losses in the transmission lines are very less these days. [1]

Reason (R): Low voltage is used for the purpose of transmission.

- 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.

20. **Assertion (A):** Plastic, glass and metal wastes keep accumulating in our surroundings and their amount never reduces with time. [1]

Reason (R): Plastic, glass and metal wastes are non-biodegradable and they cannot be decomposed by microorganisms.

- 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.

Section B

21. What is the chemical formula of washing soda? What happens when this soda is exposed to air? [2]

22. i. Write one difference between asexual and sexual modes of reproduction. [2]

ii. Which species is likely to have better chances of survival, the one reproducing asexually or the one reproducing sexually? Justify your answer.

23. Define the term transpiration. Design an experiment to demonstrate this process. [2]

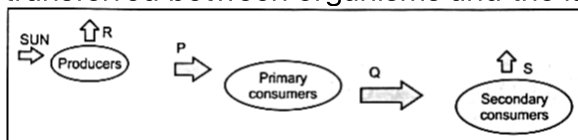
OR

- i. Name the waste products of metabolism and for each waste product, state which organ removes it from the blood.
- ii. Why is the removal of faeces from the alimentary canal not considered to be excretion?
24. Show diagrammatically, how should two converging lenses be arranged so that a parallel beam becomes parallel after passing through two lenses. [2]
25. A student wound an insulated copper wire around a soft iron rod. He then connected one end to the rheostat and the other free end to the battery via a key. He closed the key and observes the deflection in the magnetic needle placed nearby. Now he altered the current using by reversing the connections of the battery and again noted the change in the deflection of the needle. [2]
- i. Why do the student performed this activity?
- ii. What did the student observe?
- iii. Comment on the statement **a material in the middle of a current carrying coil gets magnetised.**

OR

A given length of a wire is doubled on itself. By what factor does the resistance of the wire change?

26. Which of the labelled arrows in the below diagram represents the smallest amount of energy transferred between organisms and the largest amount of energy lost to ecosystem? [2]



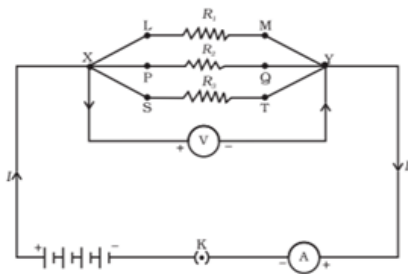
Section C

27. What would happen to copper vessel if it is left for a few days in humid atmosphere without being cleaned? [3]
28. Name a metal/non-metal: [3]
- i. Which makes iron hard and strong?
- ii. Which is alloyed with any other metal to make an amalgam?
- iii. Which is used to galvanize iron articles?
- iv. Whose articles when exposed to air form a black coating?

OR

In what forms are metals found in nature? With the help of examples, explain how metals react with oxygen, water and dilute acids. Also, write chemical equations for the reactions.

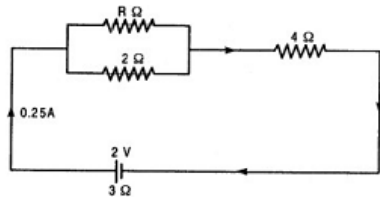
29. Draw the sectional view of the human heart and label the following parts given below: [3]
- i. Chamber where oxygenated blood from lungs is collected.
- ii. The largest blood vessel in our body.
- iii. The Muscular wall separating the right and left chambers.
- iv. The blood vessel that carries blood from the heart to the lungs.
30. An individual inherits different traits from his parents. On what basis classification of traits as dominant and recessive is done? [3]
31. A student wants to project the image of a candle flame on a screen 80 cm in front of a mirror by keeping the candle flame at a distance of 20 m from its pole. [3]
- i. Which type of mirror should the student use?
- ii. Find the magnification of the image produced.
- iii. Find the distance between the object and its image.
32. In the circuit diagram given in figure, suppose the resistors R_1 , R_2 and R_3 have the values 5Ω , 10Ω , 30Ω , respectively, which have been connected to a battery of 12 V. Calculate: [3]



- a. the current through each resistor,
- b. the total current in the circuit, and the total circuit resistance.

33. The following circuit diagram shows three resistors 2Ω , 4Ω , $R\Omega$ connected to a battery of e.m.f. $2V$ and internal resistance 3Ω . A main current of $0.25A$ flows through the circuit. [3]

- a. What is the P.D. across 4Ω resistor.
- b. Calculate P.D. across the internal resistance of the cell.



Section D

34. Discuss the formation of covalent bonds in molecules of: [5]
- i. Methane
 - ii. Carbon tetrachloride
 - iii. Water

OR

What are alcohols? What is its general formula? Give the names and molecular formula of first three members of the homologous series of alcohols.

35. With the help of a labelled diagram describe double fertilization in plants. [5]

OR

'Nervous and hormonal systems together perform the function of control and coordination in human beings.' Justify the statement.

36. a. What is a lens? List two main categories of lenses. In which category is a double concave lens placed? [5]
- b. A convex lens of focal length 15 cm forms a real image at a distance of 20 cm from its optical centre. Find the position of the object. Is the image formed by the lens magnified or diminished?

OR

An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3 cm high.

- (i) Find the position of the image.
- (ii) What is the focal length of mirror?

Section E

37. Read the text carefully and answer the questions: [4]

Carbon compounds can be easily oxidised on combustion. In addition to this complete oxidation, we have reactions in which alcohols are converted to carboxylic acids. We see that some substances are capable of adding oxygen to others. These substances are known as oxidising agents. Also some compounds are capable of adding hydrogen. These substances are known as reducing agents.

- (i) Give any two examples of good oxidising agent.

- (ii) Complete the reaction:
 $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH} + \text{Alk. KMnO}_4 \rightarrow$

OR

Give some uses of Alcohol.

38. Read the text carefully and answer the questions: [4]

The cross that includes the inheritance of two pairs of contrasting characters simultaneously is referred to as a dihybrid cross. Mendel chose pure breeding plants for yellow and green seeds and round and wrinkled shape of seeds. He cross-pollinated the plant having yellow round seeds with the plant having green wrinkled seeds. All the plants produced in F₁ generation were having yellow round seeds. The plants raised from these seeds were self-pollinated, which resulted in the production of plants having four phenotypically different types of seeds.

- (i) What will be the percentage of yr gamete produced by YyRr parent?
(ii) How many types of gametes can be produced by YYrr?
(iii) In the Mendelian dihybrid cross, when a heterozygous tall plant with green seeds is self-crossed then what will be the progenies?

OR

When round yellow seeded heterozygous pea plants are self-fertilised, then what will be the frequency of occurrence of RrYY genotype among the offsprings?

39. Read the text carefully and answer the questions: [4]

The electrical energy consumed by an electrical appliance is given by the product of its power rating and the time for which it is used. The SI unit of electrical energy is Joule. Actually, Joule represents a very small quantity of energy and therefore it is inconvenient to use where a large quantity of energy is involved. So for commercial purposes, we use a bigger unit of electrical energy which is called kilowatt-hour. 1 kilowatt-hour is equal to 3.6×10^6 joules of electrical energy.

- (i) The energy dissipated by the heater is E. When the time of operating the heater is doubled, what would be the energy dissipated?
(ii) The power of a lamp is 60 W. What will be the energy consumed in 1 minute?
(iii) The electrical refrigerator rated 400 W operates 8 hours a day. The cost of electrical energy is ₹5 per kWh. Find the cost of running the refrigerator for one day.

OR

Calculate the energy transformed by a 5 A current flowing through a resistor of 2Ω for 30 minutes.