SCIENCE – IX & X

DESIGN OF QUESTION PAPER

Weightage to different forms of questions:

Sl. No.	Forms of questions	Marks for each question	No. of questions	Total marks
1.	MCQ	1	15	15
2.	SA –I	2	6	12
3.	SA –II	3	11	33
4.	LA	5	4	20
	Total		**36**	**80**

Weightage level of questions:

Sl.no.	Level	Percentage	Marks
1.	Easy	30	24
2.	Average	55	44
3.	Difficult	15	12
	Total	**100**	**80**

Scheme of options:

1. Internal choice shall be provided in any 5 (five) questions of 3 marks, and in any 2 (two) questions of 5 marks.
2. General choice shall be provided in 5 marks questions.

Note:

1. Minimum 10% of the marks will be of Higher Order Thinking Skills (HOTS)/ Competency Based Questions.

Sample Question Paper 2023
SCIENCE - X

Total marks : 80 Time : 3 hours

General instructions:

i) The question paper consists of 23 questions in 4 Sections.
ii) All questions are compulsory in 1 and 2 marks questions (Section-A and B).
iii) Internal choice is given in 3 and 5 marks questions (Section-C and D). A student has to attempt only one of the alternatives in such questions.
iv) General choice is given in 5 marks questions. A student has to attempt only 4 questions from this Section-D.
v) Marks allocated to every question are indicated against it.

N.B: Check to ensure that all pages of the question paper are complete as indicated on the top left side.

SECTION – A

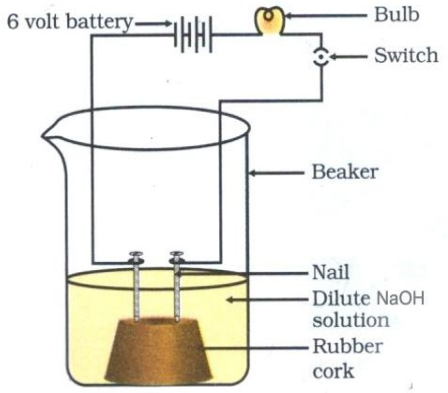
1. **Choose the correct answer from the given alternatives:**

(a) In the given reaction, which substance is oxidized? **1**

$$3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$$

(i) Fe (ii) H_2O
(iii) Fe_3O_4 (iv) H_2

(b) In an attempt to demonstrate electrical conductivity through an electrolyte, the following apparatus was set up.



Which among the following statements is/are correct? **1**

(i) Bulb will not glow because circuit is incomplete
(ii) Bulb will not glow because electrolyte is not acidic
(iii) Bulb will glow because it depends upon the type of electrolytic solution
(iv) Bulb will glow because NaOH is a strong base and furnishes ions for conduction

(c) The pH of the gastric juices released during digestion in a normal human being is **1**

(i) less than 7 (ii) more than 7
(iii) equal to 7 (iv) equal to 0

(d) Which among the following metals is the most ductile? **1**

(i) Silver (ii) Gold
(iii) Copper (iv) Aluminium

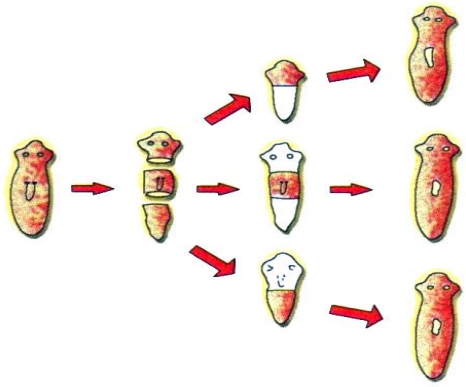
(e) Food cans are coated with tin and not zinc because **1**

(i) zinc has a higher melting point than tin
(ii) zinc is more reactive than tin
(iii) zinc is less reactive than tin
(iv) zinc is costlier than tin

(f) The movement of a sunflower plant in accordance with the path of sun is due to **1**

(i) geotropism (ii) chemotropism
(iii) hydrotropism (iv) phototropism

(g) Identify the type of asexual reproduction shown in the given figure. **1**

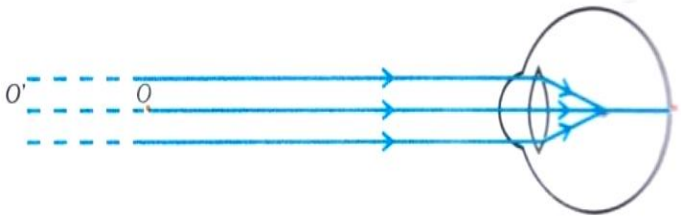


(i) Regeneration (ii) Fragmentation
(iii) Binary fission (iv) Multiple fission

(h) If a tall pea plant is crossed with a pure dwarf pea plant, then what percentage of F_1 and F_2 generation respectively will be tall? **1**

(i) 25%, 25% (ii) 50%, 50%
(iii) 100%, 75% (iv) 75%, 100%

(i) In the refractive error shown in the given figure, which type of lens should be used to correct it? **1**

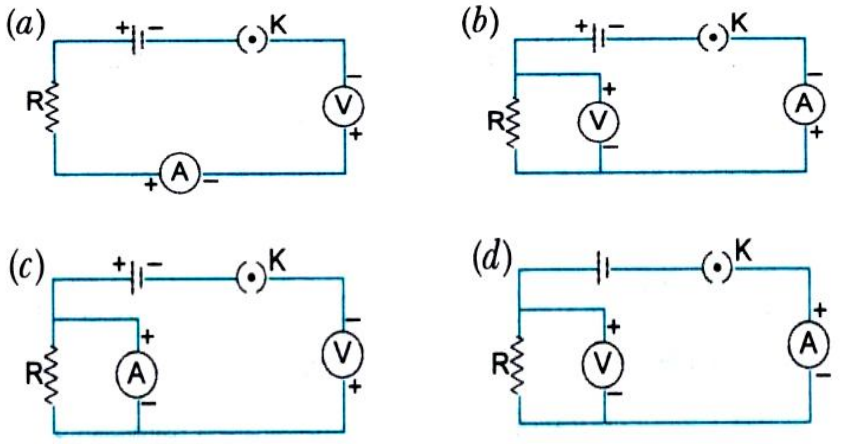


(i) Convex lens (ii) Concave lens
(iii) Bi-focal lens (iv) Cylindrical lens

(j) The light that deviates the most in a spectrum is **1**

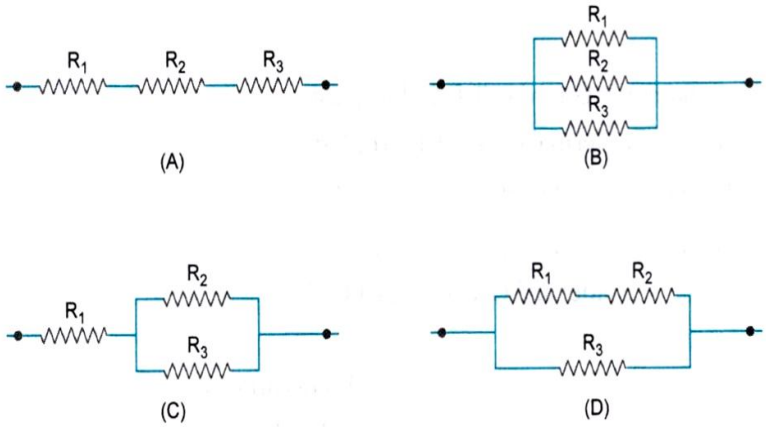
(i) red (ii) green
(iii) yellow (iv) violet

(k) Identify the given circuit in which the electrical components have been properly connected. **1**



(i) fig (a) (ii) fig (b)
(iii) fig (c) (iv) fig (d)

(l) A student was given three resistances $R_1=2\Omega$, $R_2=3\Omega$, $R_3=5\Omega$. The teacher asked the student to make a circuit in such a way that the resistance is minimum. Which figure represents the correct circuit? **1**



(i) Fig (A) (ii) Fig (B)
(iii) Fig (C) (iv) Fig (D)

(m) Which of the following pattern correctly describes the magnetic field around a long straight wire carrying current? **1**

(i) Concentric circles centred around the wire
(ii) Straight lines perpendicular to the wire
(iii) Radial lines originating from the wire
(iv) Straight lines parallel to the wire

(n) Depletion of ozone is mainly due to **1**

(i) carbon monoxide (ii) methane
(iii) pesticide (iv) chlorofluorocarbon compounds

(o) 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**

(i) heat energy (ii) light energy
(iii) chemical energy (iv) mechanical energy

SECTION – B

Answer the following questions from Q. 2 to Q. 7 in about 20-30 words:

2. Two ores A and B were taken. On heating, ore A gave CO_2 whereas, ore B gave SO_2. Name the processes to convert ore A and ore B into its metals. **2**

3. Give the structural differences between saturated hydrocarbons with one example each. **2**

4. How is the mode of action in beating of the human heart different from reflex actions? Give two examples. **2**

5. What is fertilization? Give the location of zygote after fertilization in a flower. **2**

6. How does the use of a fuse wire protect electrical appliances? Write two points. **2**

7. A student fixes a white sheet of paper on a drawing board. He places a bar magnet in the centre and sprinkles some iron fillings uniformly around the bar magnet. Then he taps gently and observes that iron fillings arrange themselves in a certain pattern. Answer the following based on the observation.
(a) Why do iron fillings arrange themselves in a particular pattern?
(b) State any one property of magnetic field lines. **2**

SECTION – C

Answer the following questions from Q. 8 to Q. 18 in about 40-60 words:

8. **a.** (i) $A + BC \rightarrow AC + B$
(ii) $A \rightarrow B + C$
Identify the two types of reactions given above. Give one example for each and balance it.

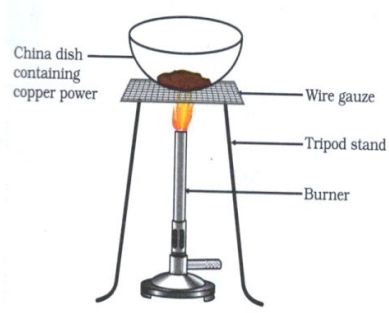
Or **1+1+1=3**

b. In the given experimental setup:

(i) Identify the type of reaction.

(ii) Write the chemical reaction.

(iii) What happens when hydrogen gas is passed over the product?



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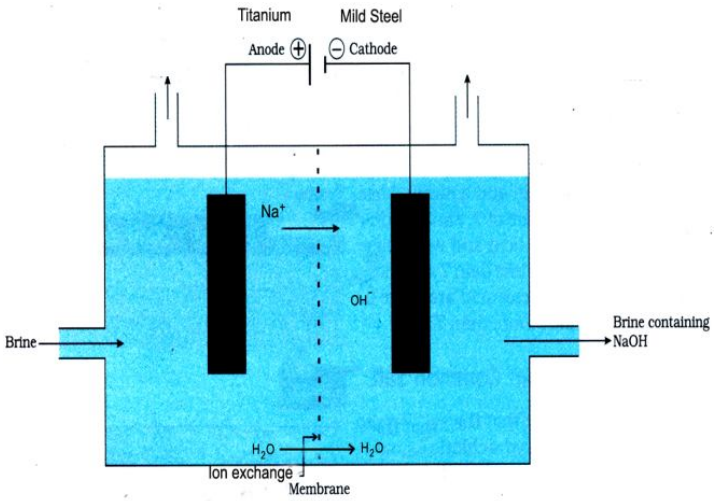


(i) Identify the gases evolved at the anode and cathode in the above experimental set up.

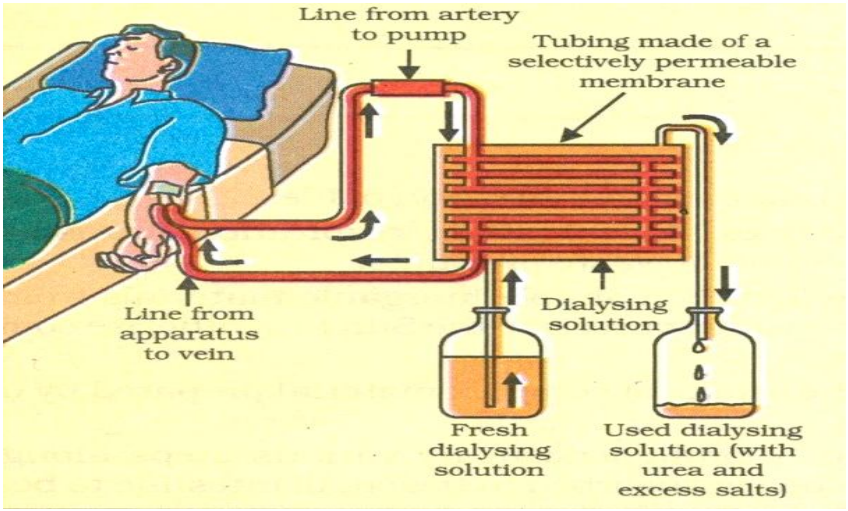
(ii) Name the process that occurs. Why is it called so? **2+1=3**

10. John lives in a tin roof house; he observed that the colour of the outer roof has changed over time into a brownish colour.

(i) What is the reason behind the change in colour?

(ii) Suggest two ways in which it can be prevented. **1+2=3**

11. **a.**



In the given figure, a patient is undergoing dialysis.

(i) Why dialysis is recommended?

(ii) Name the waste removed through dialysis.

(iii) What is the consequence if waste is not removed from the body? **1+1+1=3**

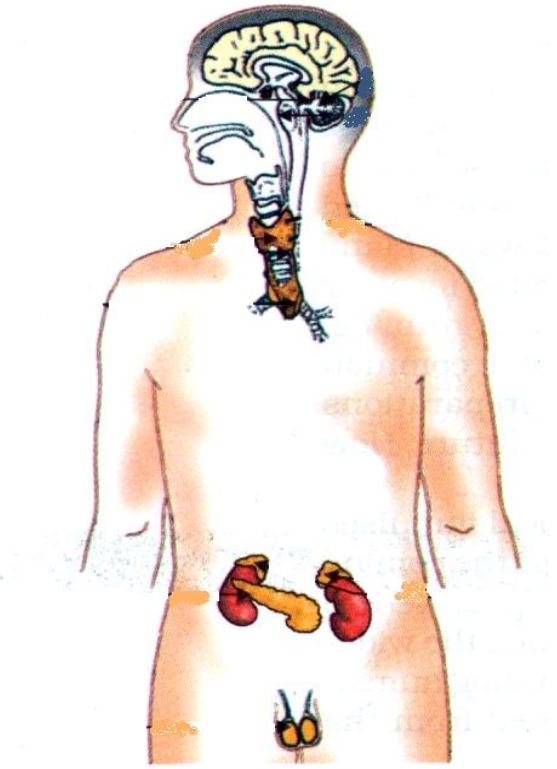
Or

b. What is stomata? How do the guard cells regulate the opening and closing of stomata? (1+2=3)

12. Label the following parts in the given figure:

(i) Adrenal glands (ii) Pancreas (iii) Thyroid gland
(iv) Pituitary gland (v) Thymus (vi) Testis

6×½=3



13. Show the F_1 and F_2 generation using Mendel monohybrid cross of pea plant with yellow and white flower colour. Give the phenotypic and genotypic ratio of F_2.

1½+1½=3

14. **a.** Theja wants to get an erect image of an object using a converging mirror of focal length 40cm.

(i) Specify the range of distance where the object has to be placed in front of the mirror. Justify.

(ii) Draw a ray diagram to show the image formation in this case.

Or **2+1=3**

b. A lens of focal length 5cm is being used by Naro in the laboratory as a magnifying glass. She keeps a book at a distance 10cm from her eyes.

(i) Where is the image formed?

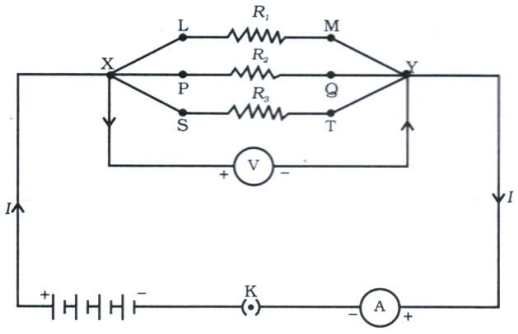
(ii) Draw a ray diagram to show the image formation.

15. **a.** What is dispersion? Explain the formation of rainbow.

Or **1+2=3**

b. What is Tyndall effect? Why is the colour of the sky blue?

16. **a.**



In the given circuit diagram, suppose the resistors R_1, R_2 and R_3 have the values 5Ω, 10Ω and 30Ω respectively, which are connected to a battery of 12V. Calculate:

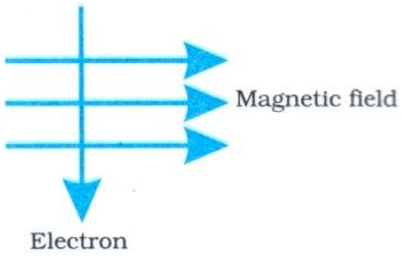
(i) The current through each resistor
(ii) The total current in the circuit
(iii) The total circuit resistance.

Or **3**

b. Two lamps, one rated 100W at 220V, and the other 60W at 220V, are connected in parallel series to the electric mains supply. What current is drawn from the line if the supply voltage is 220V? Calculate the total resistance in the circuit.

17. State Fleming's Left Hand Rule. An electron enters a magnetic field at right angles to it, as shown in the figure. What is the direction of force acting on the electron?

2+1=3



18. A lot of waste is generated in a neighborhood. However, almost all of it is biodegradable. What impact will it have on the environment of the neighborhood and on human health? **3**

SECTION – D

Answer <u>any 4 questions</u> from the following questions, Q. 19 to Q. 23 in about 70-100 words:

19. **a.** What is esterification? Write the chemical reaction involved and name the reactants. Give two uses of esterification.

Or **1+2+2=5**

b. What is absolute alcohol? What is the role of concentrated sulphuric acid when it is heated with ethanol at 443K? Give the reaction. List two uses of ethanol.

(1+1+1+2=5)

20. **a**. Draw the human alimentary canal and explain how carbohydrates, proteins and fats gets digested.

Or **2+3=5**

b. Draw and explain the human respiratory system.

21. Why are budding and fragmentation considered as asexual types of reproduction? With a neat diagram, explain the process of fission in Amoeba. Write one disadvantage of asexual over sexual reproduction.

2+2+1=5

22. Define power of a lens. What is its unit? One student uses a lens of focal length +50cm and another uses −50cm. What is the nature of the lens and its power used by each of them?

1+1+3=5

23. Suggest any five ways we can practice in our daily lives which are ecofriendly.

5×1=5