

20. What is the function of scrotum?
21. In human beings, the statistical probability of getting either a male or female child is 50 : 50. Give a suitable explanation.
22. Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms?
23. What are the methods used by plants to get rid of excretory products?
24. What are the advantages of sexual reproduction over asexual reproduction?
25. What are reflex actions? Give two examples. Explain a reflex arc.
26. Describe any 3 modes of disposal of wastes. Name the wastes which are generated in your house daily. What measures would you take for their disposal?
27. (i) Explain the mechanism of photosynthesis.  
(ii) How do carbohydrates, proteins and fats get digested in human beings?

**Or**

(i) The genotype of green stemmed tomato plants is denoted as GG and that of purple stemmed tomato plants as gg. When these two are crossed:

- (a) What colour of stem would you expect in their F<sub>1</sub> progeny?
- (b) Give the percentage of purple stemmed plants if F<sub>1</sub> plants are self pollinated.
- (c) In what ratio would you find the genotypes GG and Gg in the F<sub>2</sub> progeny?

(ii) Why did Mandel select garden pea plant (pisum sativum) for his experiment on heredity? Write two reasons.



**Science**  
(Sample Paper - III)

Time: 2½ hours

Max Marks: 60

**Marking Scheme**

Q. Nos.	1-6, 19-21	7-12, 22-24	13-16, 25, 26	17-18, 27
Marks	1	2	3	5

**Section – A**

1. Name any two synthetic acid-base indicators.
2. Identify the reducing agent in the following reaction:  

$$\text{Fe}_2\text{O}_3 + 3 \text{CO} \longrightarrow 2 \text{Fe} + 3 \text{CO}_2$$
3. If the current  $I$  through a resistor is increased by 100% (assume that temperature remains unchanged), how much increase (in percent) in power dissipation will it cause?
4. List the factors on which the force experienced by a current carrying conductor placed in a magnetic field depends?
5. Why is parallel arrangement used in domestic wiring?
6. What type of mirror is used in a torch and why?
7. Write the electron-dot structure for sodium and chlorine atoms. How do these form a chemical bond? Name the type of bond so formed.
8. How does use of a fuse wire protect electrical appliances in a circuit?
9. What is the difference between a direct current and an alternating current? What are the advantages of using AC over DC for long distance transmission?
10. Is the position of a star as seen by us its true position? Justify your answer.

11. Make a list of conventional and non-conventional sources of energy. Give a brief description of harnessing one non-conventional source of energy
12. Name the process which is responsible for enormous energy of Sun and other stars. List few advantages and disadvantages of harnessing nuclear energy.
13. During extraction of metals, electrolytic refining is used to obtain pure metals. (a) Which material will be used as anode and cathode for refining of silver metal by this process? (b) Suggest a suitable electrolyte also. (c) In this electrolytic cell, where do we get pure silver after passing electric current?
14. How do you think the tendency to lose electrons will change while moving in a periodic table:  
 (a) Down a group,  
 (b) Across a period.  
 Give reasons in support of your answers.
15. A coil of insulated copper wire is connected to a galvanometer. What will happen if a bar magnet is:  
 (a) pushed into the coil,  
 (b) withdrawn from inside the coil,  
 (c) held stationary inside the coil?  
 Name the phenomenon which is responsible for these effects.
16. What is plaster of Paris? How it is manufactured from gypsum? Give its important properties and uses.
17. (i) When a metal X is treated with cold water, it gives a basic salt Y with molecular formula XOH (Molecular mass = 40) and liberates a gas Z which easily catches fire. Identify X, Y and Z and also write the reaction involved.  
 (ii) A metal A, which is used in thermite process, when heated with oxygen gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reactions of oxide B with HCl and NaOH.

Or

- (i) On adding a drop of barium chloride solution to an aqueous solution of sodium sulphate, white precipitate is obtained.  
 (a) Write a balanced chemical equation of the reaction involved  
 (b) What other name can be given to this precipitation reaction?
- (ii) What does one mean by exothermic and endothermic reactions? Why respiration is considered an exothermic reaction? Explain.
18. 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.

Or

- (i) What is the advantage of having two eyes instead of one?  
 (ii) The far point of a myopic person is 1.5 m in front of the eye. What is the nature and power of the lens required to correct the problem?  
 (iii) The near point of a hypermetropic eye is 50 cm. What is the power of the lens required to correct this defect? Assume that the near point of the normal eye is 25 cm.

**Section – B**

19. Name the community from Rajasthan who work for conservation of forests and wildlife as a religious tenet.