

**CBSE
Class X Science
Sample Paper – 15**

Time allowed: 3 hours

Maximum Marks: 80

General Instructions:

- The question paper comprises five sections – A, B, C, D and E. You are to attempt all the sections.
- All questions are compulsory.
- Internal choice is given in sections B, C, D and E.
- Question numbers 1 and 2 in Section A are one mark questions. They are to be answered in one word or in one sentence.
- Question numbers 3 to 5 in Section B are two marks questions. These are to be answered in about 30 words each.
- Question numbers 6 to 15 in Section C are three marks questions. These are to be answered in about 50 words each.
- Question numbers 16 to 21 in Section D are five marks questions. These are to be answered in about 70 words each.
- Question numbers 22 to 27 in Section E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

Section A

1. Name the two sets of nerves which constitute the peripheral nervous system. [1]
2. Name the major parts of the brain. [1]

Section B

3. The wattage of a bulb is 30 W when it is connected to a 12 V battery. Calculate its effective wattage if it operates on a 5 V battery. [2]

OR

Heat energy of 1250 Joules is produced in 10 seconds in an electric iron having a resistance of 500 ohms. Find the current flowing through an electric iron.

4. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$
Identify the oxidising and reducing agents. Give reason. [2]
5. What will happen to grasslands if all the grazers are removed from there? [2]

Section C

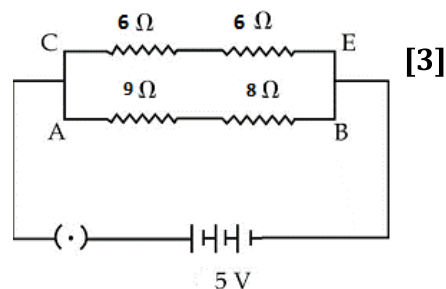
6. Why does blood in the arteries flow with jerks and is under pressure? [3]
7. Describe the concept of trophic levels. [3]

OR

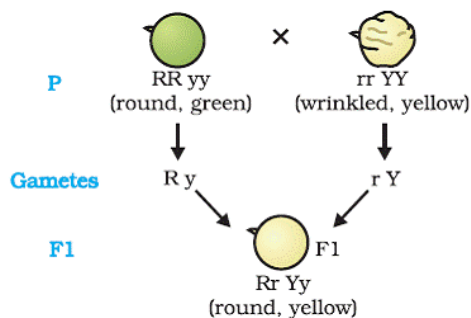
The tongue has different areas for tasting different tastes, but we do not have to place each substance at that area to know the taste. Why?

8. Study the circuit and find the [3]

- (i) Total resistance in arm CE
 (ii) Current in arm AB
 (iii) Potential difference across the 8 ohm resistor



9. An organic compound A is a constituent of antifreeze and has the molecular formula C_2H_6O . Upon reaction with alkaline $KMnO_4$, the compound A is oxidised to another compound B with formula $C_2H_6O_2$. Identify compounds A and B. Write the chemical equation for the reaction which leads to the formation of B. [3]
10. Explain, giving one example for each of the following chemical reactions:
 (a) Double decomposition reaction
 (b) Thermal decomposition reaction
 (c) Displacement reaction
11. (a) How many characters are transmitted in the following cross? Name them. [3]
 (b) Define dominant trait and recessive trait.



12. What will you observe when [3]
 (a) Red litmus is introduced into a solution of sodium sulphate.
 (b) Methyl orange is added to dil. HCl.
 (c) Blue litmus is introduced into a solution of ferric chloride.

OR

- Write the name and formula of one salt each which contains [3]
 a) two molecules of water of crystallisation
 b) five molecules of water of crystallisation
 c) ten molecules of water of crystallisation

13. (a) What are the patterns formed by the circular loop carrying current? [3]
(b) Which rule is used to find the direction of the magnetic field produced due to the electric current in a circular loop?
(c) On which factors does the strength of a magnetic field depend?

OR

- (a) Distinguish between a bar magnet and an electromagnet.
(b) State Fleming's left-hand rule.
(c) Positively charged particles moving towards the west are deflected towards the north by a magnetic field. What will be the direction of the magnetic field?
14. What is the role of the skin, lungs and intestines in the process of excretion in man? [3]
15. (a) What is the nature of the image formed by a convex mirror when the object is placed [3]
between the pole and infinity?
(b) What is diffused reflection of light?
(c) Which mirror is used as a rear-view mirror? Why?

Section D

16. (a) Name a metal which does not stick to glass. [5]
(b) Name a non-metal which is a good conductor of electricity.
(c) Name a metal which is commonly used in thermite welding.
(d) What is deposited at the cathode, a pure or impure metal?
(e) What is the nature of zinc oxide?

OR

Two ores 'A' and 'B' were taken. On heating, ore 'A' gives CO_2 , whereas ore 'B' gives SO_2 . What steps will you take to convert them to their respective metals?

[5]

17. (a) Draw a neat diagram of the respiratory system and label the following parts: [5]
(i) Lungs, (ii) Trachea, (iii) Bronchus, (iv) Diaphragm
(b) Name the respiratory pigment in human beings and discuss its role.
(c) Why is the rate of breathing in aquatic organisms faster than that in terrestrial organisms?

OR

- (a) Which device prevents implantation by irritating the lining of the uterus?
(b) What could be the possible reason for the declining female-male sex ratio in our country? Suggest two measures to achieve the 1:1 ratio.
18. (a) Define the process of incineration. Why it is considered as the safe method of waste [5]
disposal?
(b) Why are some substances degraded and others not?
19. (a) What is the working principle of the electric generator? State the energy conversion [5]
of the electric generator. What is another name for an electric generator?
(b) Write the functions of
i) Commutator
ii) Carbon brushes

20. The following table shows the position of six elements A, B, C, D, E and F in the periodic table.

| Group | 1 | 2 | 3 to 12 | 13 | 14 | 15 | 16 | 17 | 18 |
|--------|---|---|---------|----|----|----|----|----|----|
| Period | | | | | | | | | |
| 2. | A | | | | | B | | | C |
| 3. | | D | | | E | | | | F |

[5]

Using the above table, answer the following questions:

- (a) Which element will form only covalent compounds?
(b) Which element is a metal with valency 2?
(c) Which element is a non-metal with valency 3?
(d) Out of D and E, which one has a bigger atomic radius and why?
(e) Write the common name for the family of elements C and F.
21. A circuit has a fuse of 5 A. What is the maximum number of 110 W (220 V) bulbs that can be safely used in the circuit? [5]

Section E

22. Rita adds 5ml of sodium sulphate solution to a flask containing barium chloride solution. She then adds 2ml of hydrochloric acid to the mixture. List the observations, and write the chemical equations and type of reaction. [2]
23. Salt A, commonly used in bakery products, on heating gets converted to Salt B, which is used for the removal of hardness of water, and Gas C is evolved. Gas C turns limewater milky. Identify A, B and C. [2]

OR

Can detergents detect if water is hard or soft?

24. List the steps of preparation of a temporary mount of a leaf peel to observe stomata. [2]
25. Name the type of asexual reproduction in which two individuals is formed from a single parent and the parental identity is lost. Draw the initial and final stages of this type of reproduction. State the event with which this reproduction starts. [2]

OR

Mention the four events which occur during binary fission in *Amoeba*.

26. The object placed in front of a concave mirror of focal length 20 cm forms a real and inverted image of equal size as that of the object. Find the object distance. [2]
27. If the current flowing through a fixed resistor is halved. What will be the change in heat produced in the resistor? [2]