CBSE

Class X Science

Sample Paper – 15

Time: 3 hrs **Maximum Marks: 80**

General Instructions:

1. The question paper comprises three sections – A, B and C. Attempt all the sections.
2. All questions are compulsory.
3. Internal choice is given in each section.
4. All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
5. All questions in Section B are three-mark, short answer type questions. These are to be answered in about 50–60 words each.
6. All questions in Section C are five-mark, long answer type questions. These are to be answered in about 80–90 words each.
7. This question paper consists of a total of 30 questions.

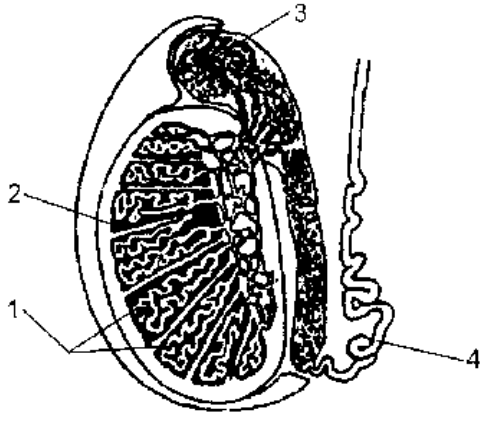
Section A

1. Define renewable sources of energy. Give examples. (1)

2. If the object is placed at a distance of 15 cm in front of the concave mirror of focal length of 10 cm, then what will be the nature of the image? (1)

3.

(a) Given below is a diagram of the lateral section of the human testis. Study the same and answer the questions which follow:



(i) State the functions of the parts labelled 1 and 3. (1)

(ii) What is the significance of the testes being located in the scrotal sac outside the abdomen? (1)

(b) Draw a diagram of the human eye as seen in a vertical section and label the parts which suit the following descriptions relating to the

(i) Photosensitive layer of the eye (1)

(ii) Structure responsible for holding the eye lens in position (1)

4. The following diagram shows a part of the modern periodic table in which elements are arranged according to their atomic numbers. (The letters given here are not the chemical symbols of the elements):

A 3	B 4		C 5	D 6	E 7	F 8	G 9	H 10
I 11	J 12		K 13	L 14	M 15	N 16	O 17	P 18

(a) Which element has a larger atom, A or F? (1)

(b) Which element has a higher valency, K or O? (1)

(c) Which element is more metallic, I or K? (1)

(d) Select letters which represent a metal of valency 2. (1)

5. The unit used to measure current is (1)

(A) Ampere

(B) Coulomb

(C) Volt

(D) Joule

OR

The resistance of all pure metals

(A) decreases on increasing the temperature and increases on lowering the temperature

(B) increases on increasing the temperature and decreases on lowering the temperature

(C) initially increases and then decreases

(D) does not depend on the temperature

6. A magnet cannot attract (1)

(A) Cobalt

(B) Nickel

(C) Steel

(D) Silver

7. Linear magnification produced by a concave mirror may be (1)

(A) less than 1 or equal to 1

(B) zero or 1

(C) more than or equal to 1

(D) less than 1, more than 1 or equal to 1

8. Which of the following provides nourishment to the ovule? (1)

(A) Micropyle
(B) Ovary
(C) Funicle
(D) Pedicel

OR

Which of the below is an advantage of sexual reproduction?

(A) Difficulty in variation
(B) Difficulty in seed germination
(C) Promotes diversity in the character of the offspring
(D) None of these

9. Montreal Protocol was designed to prevent (1)

(A) Biomagnification
(B) Eutrophication
(C) Ozone depletion
(D) Formation of smog

10. When hydrocarbons are burned in oxygen, they produce (1)

(A) Light
(B) Heat
(C) Water
(D) All of the above

11. Which combination of atoms will produce an ionic compound? (1)

(A) Al and Br
(B) S and F
(C) Si and S
(D) C and H

12. The fight or flight response of the body is possible because of the hormone (1)

(A) Adrenaline
(B) Insulin
(C) Thyroxine
(D) Dopamine

OR

Motor neurons communicate with the muscle fibres through the neurotransmitter at the

(A) Neuromuscular junction
(B) Synapse
(C) Synaptic cleft

(D) Synaptic neurojunction

For question numbers 13 and 14, two statements are given—one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (i), (ii), (iii) and (iv) as given below.

i) Both A and R are true, and R is the correct explanation of the assertion.
ii) Both A and R are true, but R is not the correct explanation of the assertion.
iii) A is true, but R is false.
iv) A is false, but R is true.

13. Assertion: Food chains are limited to 4–5 trophic levels.
Reason: The flow of energy within trophic levels follows the 10% law. (1)

14. Assertion: Hypermetropia is the defect of vision in which a person can see nearby objects clearly.
Reason: The near point of a person with hypermetropia is more than 25 cm. (1)

Section B

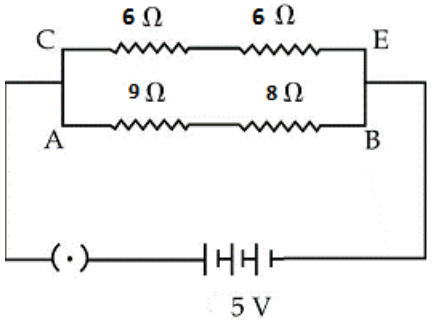
15. Why does blood in the arteries flow with jerks and is under pressure? (3)

16. Describe the concept of trophic levels. (3)

OR

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

17. Study the circuit and find the (3)



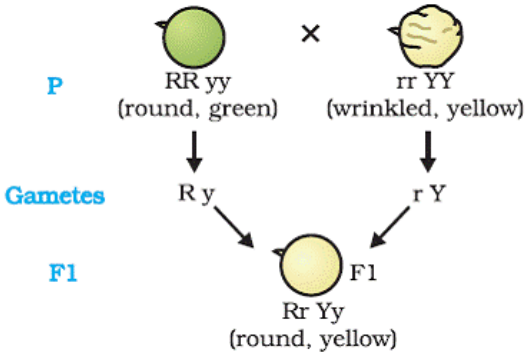
(i) Total resistance in arm CE
(ii) Current in arm AB
(iii) Potential difference across the 8-ohm resistor

18. 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)

19. Explain giving one example for each of the following chemical reactions:
(a) Double decomposition reaction
(b) Thermal decomposition reaction
(c) Displacement reaction

20.
(a) How many characters are transmitted in the following cross? Name them. (3)
(b) Define dominant trait and recessive trait.



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

OR

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

22. (3)
(a) What are the patterns formed by the circular loop carrying current?
(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?

23. What is the role of the skin, lungs and intestines in the process of excretion in man? (3)

24. (3)

(a) What is the nature of the image formed by a convex mirror when the object is placed between the pole and infinity?

(b) What is diffused reflection of light?

(c) Which mirror is used as a rear-view mirror? Why?

Section C

25.

(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?

26. (5)

(a) Draw a neat diagram of the respiratory system and label the following parts:
(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. (5)

27.

(a) Define the process of incineration. Why is it considered a safe method of waste disposal?

(b) Why are some substances degraded and others not?

28. (5)

(a) What is the working principle of the electric generator? State the energy conversion of the electric generator. What is another name for an electric generator?

(b) Write the functions of
i) Commutator
ii) Carbon brushes

29. The following table shows the position of six elements A, B, C, D, E and F in the periodic table. (5)

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

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 larger atomic radius and why?

(e) Write the common name for the family of elements C and F.

30. 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)

OR

a) What is the SI unit of electrical energy? What is an expression for electrical energy consumed by electrical appliances?

b) What is the commercial unit of electrical energy? Deduce the expression for converting the commercial unit of electrical energy to the SI unit of electrical energy.