Sample/Pre-Board Paper 23

Class X Term 1 Exam Nov -Dec 2021

Science (086)

Time: 90 Minutes

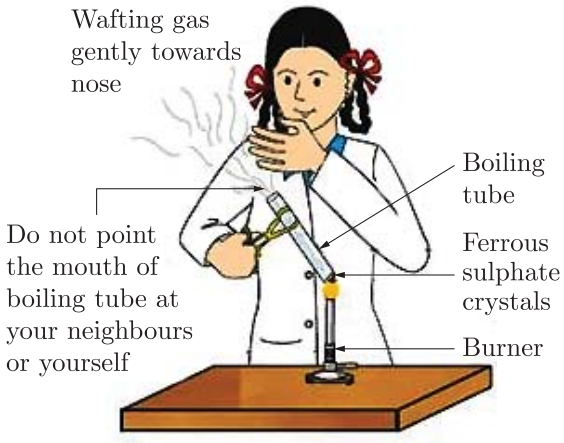
General Instructions:

1. The question paper contains three sections.
2. Section A has 24 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 12 questions. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

Section A

Section – A consists of 24 questions. Attempt any 20 questions from this section.
The first attempted 20 questions would be evaluated.

1. Sunita takes about 2 g ferrous sulphate crystals in dry boiling tube and heat the boiling tube over the flame of a burner or spirit lamp as shown in the figure.



The colour of crystals after heating is:

(a) Black (b) Brown

(c) Green (d) Orange

2. When 2 mL of sodium hydioxide solution is added to a few pieces of granulated zinc metal taken in test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing.
The name of the gas is:

(a) Hydrogen (b) Oxygen

(c) Nitrogen (d) Helium

3. Which of the following is correct regarding to metals?

1. They have one to three valence electrons
2. They have 4 to 8 valence electrons
3. They are brittle
4. They are capable to form anions easily

(a) 1 and 2 (b) 2 and 3

(c) 1 (d) 1, 2, 3 and 4

4. $CaO(s) + H_2O(l) \longrightarrow X(s)$ + Heat + Hissing sound.

Here X is:

(a) Cu(OH) (b) $Cu(OH)_2$

(c) 2CaOH (d) Ca_2OH

5. Which of the following is acidic in nature?

(a) Lime juice (b) Human blood

(c) Lime water (d) Antacid

6. Which of the following are correctly matched?

1.	Combination reaction	Formation of single product.
2.	Decomposition reaction	Break down of single, entity.
3.	Thermal decomposition	Heat is used.
4.	Displacement reaction	Based on reactivity series.

(a) 1, 2 and 3 (b) 1, 2 and 4

(c) 1, 3 and 4 (d) 1, 2, 3 and 4

7. In a _____, two or more substances combine to a form a new single substance.

(a) displacement reaction (b) combination reaction

(c) decomposition reaction (d) oxidation reaction

8. Which of the following are correctly matched?

1.	Plants and animals	pH range is 7.0 to 7.8
2.	Rain water	pH is 7.6
3.	Tooth decay	pH less than 5.5

(a) 1 and 2 (b) 2 and 3

(c) 1 and 3 (d) 1, 2 and 3

9. Which one of the following is used in manufacturing of ammonia?

(a) Washing soda (b) Bleaching powder

(c) Plaster of paris (d) Hydrogen gas

10. Which of the following pair is incorrect?

	Reaction	**Reaction Name**
(a)	$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$	Combustion reaction and oxidation reaction
(b)	$Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$	Double displacement and precipitation reaction
(c)	$CaO + H_2O \rightarrow Ca(OH)_2$	Combination reaction
(d)	$CuSO_4 + Zn \rightarrow ZnSO_4 + Cu$	Combination reaction

11. Which of the following is the correct route for blood flow in a human?

(a) Right atrium → Right ventricle → Lungs → Left atrium → Left ventricle

(b) Right atrium → Right ventricle → Left ventricle → Left atrium → Lungs

(c) Left atrium → Left ventricle → Right ventricle → Right atrium → Lungs

(d) Left atrium → Left ventricle → Lungs → Right ventricle → Right atrium

12. The undigested material is ..... in some micro-organism.

(a) Absorbed in the surface

(b) Thrown out

(c) Helps for further growth

(d) None of the above

13. Choose the incorrect statement:

(a) We don't need energy while not doing any activity

(b) We release energy and feel tired while doing various activities

(c) Energy is needed to maintain the state of body

(d) Our body need to synthesize protein to develop

14. The thick stem of trees respire through

(a) Trachea

(b) Stomata

(c) Lenticel

(d) Gills

15. The only reptile having 4 chambered heart is:

(a) Snake

(b) Turtle

(c) Lizard

(d) Crocodile

16. The principal nitrogenous excretory compound in humans is synthesised?

(a) In the liver but eliminated mostly through kidneys

(b) In kidneys but eliminated mostly through liver

(c) In kidneys as well as eliminated by kidneys

(d) In liver and also eliminated by the same through bile.

17. Where should an object is placed in front of a convex lens to get a real image of the size of the object?

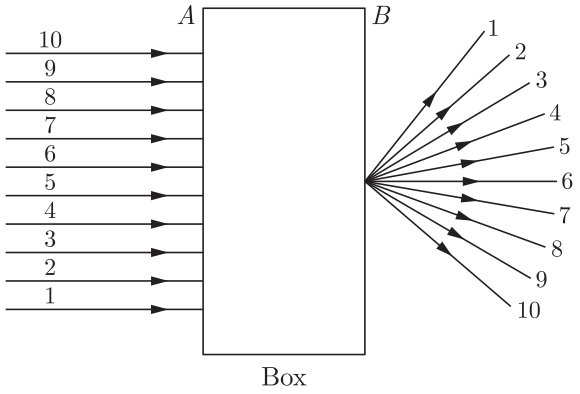
(a) At the principal focus of the lens

(b) At twice the focal length

(c) At infinity

(d) Between the optical centre of the lens and its principal focus.

18. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as shown in figure. Which of the following could be inside the box?



(a) Concave lens

(b) Rectangular glass slab

(c) Prism

(d) Convex lens

19. A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object?

(a) 0.25 m (b) 0.30 m

(c) 0.35 m (d) 0.40 m

20. The power of a concave lens of focal length of 2 m is-

(a) 0.5 D

(b) -0.5 D

(c) 1 D

(d) -1 D

21. A concave lens of focal length 15 cm forms as image 10 cm from the lens. How far is the object placed from the lens?

(a) -20 cm

(b) 40 cm

(c) -30 cm

(d) -40 cm

22. Mark the correct statement
(a) Centre of reflecting surface of a spherical mirror is called the centre of curvature
(b) Pole lies outside the mirror
(c) Pole is represented by Po
(d) None

23. The central point of a spherical mirror is called:
(a) Pole (b) Centre of sphere
(c) Centre of curvature (d) None of these

24. The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light:
(a) is scattered the most by smoke or fog
(b) is scattered the least by smoke or fog
(c) is absorbed the most by smoke or fog
(d) moves fastest in air.

Section B

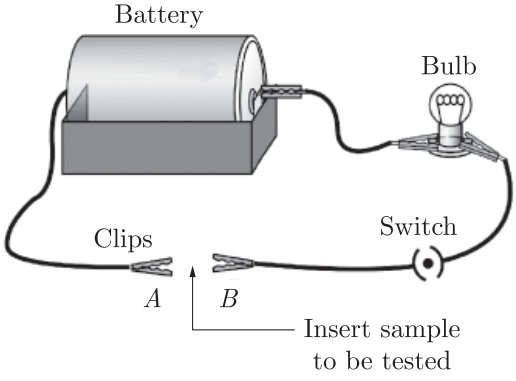
Section - B consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. The first attempted 20 questions would be evaluated.

25. Hard water is not available for an experiment in the school and its vicinity. However, some salts as given below are available in the school laboratory.
1. Sodium Chloride
2. Sodium Sulphate
3. Calcium Chloride
4. Calcium Sulphate
5. Potassium Chloride
6. Magnesium Sulphate

Select form the following a group of these salts, each member of which may be dissolved in water to make it hard.
(a) 1, 2, 5
(b) 1, 3, 5
(c) 3, 4, 6
(d) 2, 4, 6

26. Which of following tablets are used by a person suffering from acidity?
(a) Antacid
(b) Antabuse
(c) Antasalt
(d) None of these

27. A student arrange the battery, bulb, switch and clips as shown in the figure:



When ..... wire is placed between the terminals A and B. The bulb light up.
1. Copper
2. Aluminium
3. Iron
4. Silver

(a) 1 (b) 2
(c) 3 (d) All of these

28. How do the atoms combine in $CaCl_2$ or Calcium Chloride?
(a) By forming metallic bond
(b) By forming co-ordinate covalent bond
(c) By forming ionic bond
(d) By forming covalent bond

29. The acidic solution is the one in which the concentration of ..... is grater than that of ..... ions.
(a) H^+, OH^-
(b) DH^-, H^+
(c) H_3O^+, H^+
(d) H^+, H_3O^+

30. Which of the following pairs will give displacement reaction?
(a) NaCl solution and copper metal
(b) $MaCl_2$ solution and aluminium metal
(c) $FeSO_4$ solution and silver metal
(d) $AgNO_3$ solution and copper metal.

31. **Assertion :** Acids contain H^+ ions.
Reason : H^+ ions neutralise acids.
(a) Both Assertion and Reason are true and Reason is the correct explanation of the Assertion.
(b) Both Assertion and Reason are true but Reason is not the correct explanation of the Assertion.
(c) Assertion is true but the Reason is false.
(d) Both Assertion and Reason are false.

32. **Assertion :** The following chemical equation,

$2C_6H_6 + 7O_2 \longrightarrow 4CO_2 + 6H_2O$

is a balanced chemical equation.

Reason : In a balanced chemical equation, the total number of atoms of each element may or may not equal on both side of the equation.

(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.

(b) Both Assertion and Reason are True but Reason is not the Correct explanation of the Assertion.

(c) Assertion is True but the Reason is False.

(d) Both Assertion and Reason are False.

33. **Assertion :** Excretion is the biological process by which harmful wastes are removed from an organism's body.

Reason : The mode of excretion is completely same in both unicellular and multicellular organisms.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) Assertion is true but Reason is false.

(d) Assertion is false but Reason is true.

34. **Assertion :** When a light ray is refracted through a glass prism, emergent ray is parallel to incident ray.

Reason : Two sides of prism doing refraction are parallel to each other.

(a) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

(c) Assertion is true but Reason is false.

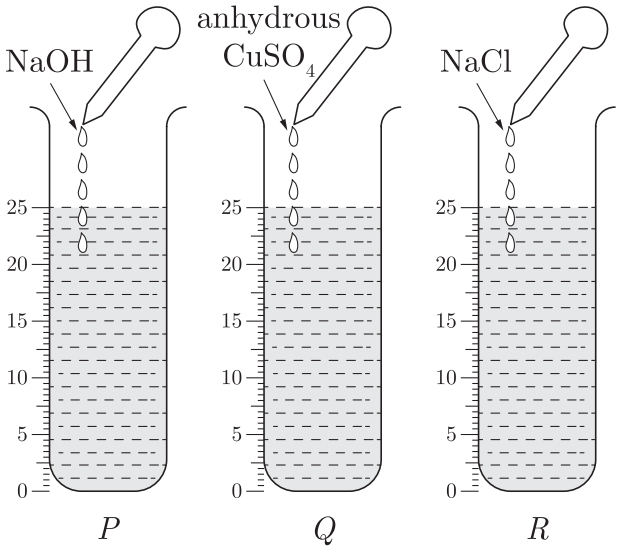
(d) Both Assertion and Reason are false.

35. A highly reactive element (X) reacts with oxygen of air even at room temperature to give an oxide (Y) . The oxide (Y) is soluble in water. The aqueous solution of (Y) does not change the colour of red litmus solution but reacts with an aqueous solution of sodium hydroxide. Here X is-

(a) sodium (b) phosphorus

(c) carbon (d) sulphur

36. Three beakers labelled as P, Q and R each containing 25 ml of water were taken. A small amount of NaOH, anhydrous $CuSO_4$ and NaCl were added to the beakers P, Q and R respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers P and Q, whereas in case of breaker R, the temperature of the solution falls. Which one of the following statements(s) is (are) correct?



1. In beakers P and Q, exothermic process has occurred.
2. In beakers P and Q, endothermic process has occurred.
3. In beaker R, exothermic process has occurred.
4. In beaker R, endothermic process has occurred.

(a) Only 1 (b) Only 2

(c) 1 and 4 (d) 2 and 3

37. Pigment haemoglobin is present in

(a) WBC (b) blood platelets

(c) bloods plasma (d) RBC

38. In amoeba excretion takes place through the process of?

(a) Diffusion (b) Infusion

(c) Uricotelic (d) None of the above

39. An object of height 6 cm is placed perpendicular to the principal axis of a concave lens of focal length 5 cm. If the distance of the object from the lens is $10\,\text{cm}$. The position of image is:

(a) $\frac{10}{3}\,\text{cm}$ (b) $\frac{-10}{3}\,\text{cm}$

(c) $\frac{20}{3}\,\text{cm}$ (d) $\frac{-20}{3}\,\text{cm}$

40. If the speed of light in vacuum is $3 \times 10^8\,\text{m/s}$, the absolute refractive index of a medium in which light travels with a speed of $1.4 \times 10^8\,\text{m/s}$ is

(a) 2.14 (b) 3.14

(c) 4.15 (d) 1.14

41. Which of the following organ is not involved in excretion?

(a) Lungs

(b) Liver

(c) Stomach

(d) Skin

42. The process of movement of solvent particles from region of less solute concentration to region of high solute concentration through semi permeable membrane is called .....

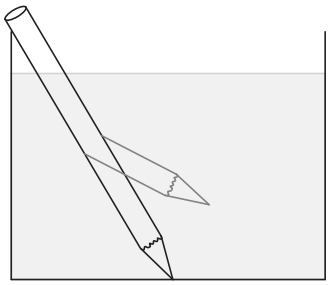
(a) Diffusion

(b) Osmosis

(c) Transpiration

(d) Translocation

43. Which statement best describes the property of light waves illustrated in the diagram below?



(a) Some materials absorb light waves.

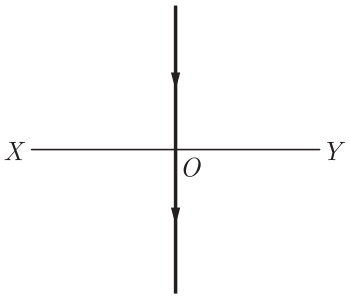
(b) Some materials refracted by some materials.

(c) Light waves are refracted by some materials.

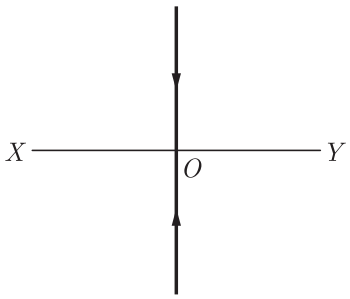
(d) Light waves are emitted by some materials.

44. Which of the following figures shows no refraction of light when it is incident normally on a boundary of two media?

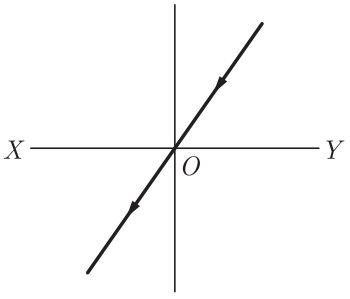
(a)



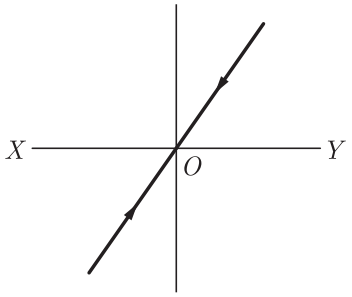
(b)



(c)



(d)



45. An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focussed image can be obtained?

(a) 54 cm

(b) 60 cm

(c) -54 cm

(d) -60 cm

46. A 6 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 15 cm. The distance of the object from the lens is 10 cm. The position, of the image is-

(a) 20 cm

(b) 30 cm

(c) -30 cm

(d) 50 cm

47. The magnification of a spherical mirror is ± 2. Then the mirror must be

(a) Plane

(b) Concave

(c) Convex

(d) Any one of these

48. An example of a liquid metal is _____and that of a liquid non-metal is_____

(a) mercury, bromine

(b) gallium, mercury

(c) mercury, chlorine

(d) bromine, mercury

Section C

Section- C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.
The first attempted 10 questions would be evaluated.

Case Based Questions: (49-52)

Metals react with non-metals by losing or gaining electrons. They have a give-and-take relation between them. Ionic compounds are usually solid and hard in nature. They are generally soluble in water and insoluble in solvent like petrol, kerosene, etc. The melting and boiling points of electrovalent compounds are high. In order to change the physical state of the electrovalent compounds (from solid to liquid to gas), a high temperature is needed to overcome the attractive forces.

49. Which of the following properties is not generally exhibited ionic compounds?
(a) Electrical conductivity in molten state
(b) Electrical conductivity in solid state
(c) High melting and boiling points
(d) Solubility in water

50. Electrovalent compounds are usually solid and hard in nature. This is due to
(a) strong forces of attraction between the oppositely charged ions.
(b) weak forces of attraction between the oppositely charged ions.
(c) strong forces of attraction between the same charged ions.
(d) weak forces of attraction between the similarly charged ions.

51. Transfer of one or more valence electrons from a metal to non-metal takes place in case of
(a) chemical bonding (b) molecular bonding
(c) ionic bonding (d) covalent bonding

52. Calcium oxide is formed by loosing of electrons to oxygen atoms, the calcium atom has the number of valence electrons as
(a) three (b) one
(c) four (d) two

Case Based Questions: (53-56)

Arteries are the vessels which carry blood away from the heart to various organs of the body. Since the blood emerges from the heart under high pressure, the arteries have thick, elastic walls. Veins collect the blood from different organs and bring it back to the heart. They do not need thick walls because the blood is no longer under pressure, instead they have valves that ensure that the blood flows only in one direction. On reaching an organ or tissue, the artery divides into smaller and smaller vessels to bring the blood in contact with all the individual cells. The smallest vessels have walls which are one-cell thick and are called capillaries. Exchange of material between the blood and surrounding cells takes place across this thin wall. The capillaries then join together to form veins that convey the blood away from the organ or tissue.

53. What is importance of thin walls of blood capillaries?
(a) Thin walls of blood capillaries provide them protection.
(b) Exchange of materials between the blood and surrounding cells take place across the thin walls of blood capillaries.
(c) Thin walls of blood capillaries help on smooth flow of blood.
(d) All of the above.

54. Write two differences between arteries and veins.
(a) Arteries are blood vessels while veins are not.
(b) Arteries have thick walls while veins have thin walls.
(c) Arteries have valves while do not have valves.
(d) All of the above.

55. What is the function of valves in veins?
(a) Valves ensure the unidirectional flow of blood.
(b) Valves increase the oxygen carrying capacity of the blood.
(c) Valves protect the veins from outer shocks.
(d) Valves withstand the high pressure of blood in veins.

56. Which blood vessels have high blood pressure and what they have to withstand this high pressure?
(a) Both arteries and veins have same pressure of blood and they are thich walled vessels.
(b) Arteries have high blood pressure and they have elastic and thick walls to withstand this high pressure.
(c) Veins have high blood pressure and they have to valves to withstand this high pressure.
(d) None of the above.

Case Based Questions: (57-60)

When a beam of light is incident from are homogeneous medium on a shiny surface of other medium, a part of it is returned back into the same medium. The return of light into the some medium after streaking a surface is called reflection. The law of reflection are following.

Let us recall these laws:

(a) The angle of incidence is equal to the angle of reflation, and

(b) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane.

These laws of reflection are applicable to all types of reflecting surfaces including spherical surfaces. You are familiar with the formation of image by a plane mirror. What are the properties of the image? Image formed by a plane mirror is always virtual and erect. The size of the image is equal to that of the object. The image formed is as far behind the mirror as the object is in front of it. Further, the image is laterally inverted.

57. What is magnification produced by the plane mirror if the size of object is 24 cm?

(a) -24 (b) $+24$

(c) -1 (d) $+1$

58. If the angle of incidence of light on mirror is 30°. The value of angle of reflection is

(a) 30° (b) 45°

(c) 60° (d) 90°

59. The phenomenon of bouncing back of a ray of light after striking to a surface is called ..... .

(a) Dispersion of light (b) Scattering of light

(c) Refraction of light (d) Reflection of light

60. Which of the following shows the phenomenon of reflection?

(a) A concave mirror (b) A plane mirror

(c) A convex mirror (d) All of these

SAMPLE PAPER - 18 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(b)	Ch-1	168
2	(a)	Ch-2	119
3	(c)	Ch-3	128
4	(b)	Ch-1	38
5	(a)	Ch-2	23
6	(d)	Ch-1	136
7	(b)	Ch-1	15
8	(c)	Ch-2	40
9	(d)	Ch-2	109
10	(d)	Ch-1	104
11	(a)	Ch-4	178
12	(b)	Ch-4	50
13	(a)	Ch-4	17
14	(c)	Ch-4	113
15	(d)	Ch-4	114
16	(a)	Ch-4	116
17	(b)	Ch-5	11
18	(d)	Ch-5	127
19	(a)	Ch-5	7
20	(b)	Ch-5	8
21	(c)	Ch-5	15
22	(d)	Ch-5	New
23	(a)	Ch-5	New
24	(b)	Ch-6	9
25	(d)	Ch-2	103
26	(a)	Ch-2	118
27	(d)	Ch-3	163
28	(c)	Ch-3	33
29	(a)	Ch-2	134
30	(d)	Ch-3	90
31	(c)	Ch-2	156

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(c)	Ch-1	164
33	(c)	Ch-4	239
34	(d)	Ch-6	56
35	(b)	Ch-2	47
36	(c)	Ch-1	169
37	(d)	Ch-4	105
38	(a)	Ch-4	120
39	(b)	Ch-5	40
40	(a)	Ch-5	39
41	(c)	Ch-4	135
42	(b)	Ch-4	150
43	(c)	Ch-5	179
44	(a)	Ch-5	108
45	(c)	Ch-5	18
46	(c)	Ch-5	43
47	(b)	Ch-5	82
48	(a)	Ch-3	53
49	(b)	Ch-3	183
50	(a)	Ch-3	184
51	(c)	Ch-3	185
52	(d)	Ch-3	186
53	(b)	Ch-4	253
54	(b)	Ch-4	254
55	(a)	Ch-4	255
56	(b)	Ch-4	256
57	(d)	Ch-5	217
58	(a)	Ch-5	218
59	(d)	Ch-5	219
60	(d)	Ch-5	220