Sample/Pre-Board Paper 30

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. Identify the substances that is oxidized and the substances that is reduced in the following reactions:

$$CuO(s) + H_2(g) \longrightarrow Cu(s) + H_2O(l)$$

(a) H_2, CuO
(b) H_2, H_2O
(c) H_2, Cu
(d) Cu, H_2

2. We need 20% aqueous solution of sodium hydroxide for the study of saponification reaction. When we open the lid of the bottle containing solid sodium hydroxide we observe it in which form?
(a) Colourless transparent beads
(b) Small white beads
(c) White pellets/flakes
(d) Fine white powder

3. An element X has electronic configuration 2, 8, 1 and another element Y has electronic configuration 2, 8, 7. They form a compound Z. The property that is not exhibited by Z is
(a) It has high melting point.
(b) It is a good conductor of electricity in its pure solid state.
(c) It breaks into pieces when beaten with hammer.
(d) It is soluble in water

4. What happens when ferrous sulphate crystals are heated?
(a) A gas having the smell of burning sulphur is evolved.
(b) No gas is evolved.
(c) Brown coloured gas is evolved.
(d) Colourless and odourless gas is evolved.

5. The chemical formula of plaster of paris is
(a) $CaSO_4 \cdot \frac{1}{2}H_2O$ (b) $CaSO_3 \cdot \frac{1}{2}H_2O$
(c) $Ca \cdot SO_4\frac{1}{2}O_2$ (d) $SO_4 \cdot \frac{1}{2}H_2O$

6. When the gases sulphur dioxide and hydrogen sulphide mix in the presence of water, the reaction is $SO_2 + 2H_2S \rightarrow 2H_2O + 3S$.

Here hydrogen sulphide is acting as:
(a) an oxidising agent
(b) a reducing agent
(c) a dehydrating agent
(d) a catalyst

7. A shiny brown coloured element X on heating in air becomes black in colour. Here X is:
(a) Copper (b) Silver
(c) Aluminium (d) Mercury

8. Which of the following pair is incorrect?

	Acid	**Source**
(a)	Ascorbic acid	All citrus fruits
(b)	Malic acid	Pears
(c)	Formic acid	Ant stings
(d)	Acetic acid	Milk

9. ..... is used in bathing soaps.
(a) Sodium hydroxide
(b) Potassium hydroxide
(c) Magnesium hydroxide
(d) Ammonium hydroxide

10. A student added dilute HCl to a test tube containing zinc granules and made following observations :
(a) the zinc surface became dull and black
(b) a gas evolved which burnt with a pop sound
(c) the solution remained colourless
(d) the solution becomes green in colour

11. What is the name of the blood vessels that provide nutrition of the heart wall?
(a) Pulmonary arteries
(b) Pulmonary veins
(c) Coronary arteries
(d) Descending aorta

12. Hydrochloric acid facilitates the action of ..... .
(a) keratin
(b) collagen
(c) elastin
(d) pepsin

13. The process by which autotrophic organism fulfill their energy requirement is known as
(a) Respiration
(b) Transpiration
(c) Photosynthesis
(d) Excretion

14. Which one of the following is not a function of kidney?
(a) Filtration
(b) Oxidation
(c) Absorption
(d) Secretion

15. Transpiration and _____ help in transport of water in plants?
(a) Translocation
(b) Photosynthesis
(c) Root pressure
(d) Shoot pressure

16. ..... helps in trans location of food in plants.
(a) Xylem
(b) Phloem
(c) Palisade cells
(d) Root hairs

17. The focal length of a convex mirror is $12.5\,\text{cm}$. How far is its centre of curvature from the pole?
(a) 25 cm
(b) 30 cm
(c) 40 cm
(d) 50 cm

18. A virtual image three times the size of the object is obtained with a concave mirror of radius of curvature 24 cm. The distance of the object from the mirror is
(a) 20 cm (b) 10 cm
(c) 12 cm (d) 5 cm

19. 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) $\frac{-20}{3}\,\text{cm}$

20. An object of height 5 cm is placed perpendicular to the principal axis of a concave lens of focal length 10 cm. If the distance of the object from the optical centre of the lens is 20 cm, the size of the image is-
(a) 1.66 cm (b) 2.16 cm
(c) 1.69 cm (d) 2.91 cm

21. The image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed on the other side of the lens at distance of 60 cm from the optical centre of the lens. The focal length of lens is-
(a) 40 cm (b) 30 cm
(c) 50 cm (d) 20 cm

22. When the distance between the object and the plane mirror increases:
(a) the image distance remains same
(b) the size of the image will become less than the size of the object
(c) the distance between the image and the plane mirror increases
(d) the distance between the image and the plane mirror decreases

23. A convex mirror of focal length f (in air) is immersed in a liquid $\left(\mu = \frac{4}{3}\right)$. The focal length of the mirror in liquid will be:
(a) $\left(\frac{3}{4}\right)f$
(b) $\left(\frac{4}{3}\right)f$
(c) f
(d) $\left(\frac{7}{3}\right)f$

24. The intensity of scattered light (I) varies with wavelength as, $I \propto \lambda^n$, where n equals
(a) 4 (b) 3
(c) 2 (d) -4

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. A student require hard water for an experiment in his laboratory which is not available in the neighbouring area. In the laboratory there are some salts, which when dissolved in distilled water can convert it into hard water. Select from the following groups of salts, a group, each salt of which when dissolved in distilled water will make it hard.
(a) Sodium chloride, Potassium chloride
(b) Sodium sulphate, Potassium sulphate
(c) Sodium sulphate, Calcium sulphate
(d) Calcium sulphate, Calcium chloride

26. An acid produces ..... ions in water.
(a) Hydrogen
(b) Helium
(c) OH^-
(d) None of these

27. Metals are usually hard and difficult to cut. On the other hand, non-metals are usually brittle. When hit with a hammer, they break into small pieces. Identify the element that is relatively brittle from the options below:
(a) Diamond
(b) Sulphur
(c) Iron
(d) Magnesium

28. Ionic compounds are soluble in _____ solvents.
(a) polar
(b) non-polar
(c) in both
(d) none of the above

29. The correct statement regarding universal indicator is
(a) it gives orange colour at $pH = 3$
(b) it becomes colourless at $pH = 7$
(c) it is an indicator having $pH = 7$
(d) it gives blue colour at $pH = 3$

30. The percentage of Au in 18 carat gold?
(a) 25%
(b) 75%
(c) 30%
(d) 20%

31. **Assertion :** In a neutralisation reaction, metal and non-metal react to form salt.
Reason : Metal contains H^+ ions and non-metal OH^- ions.
(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.

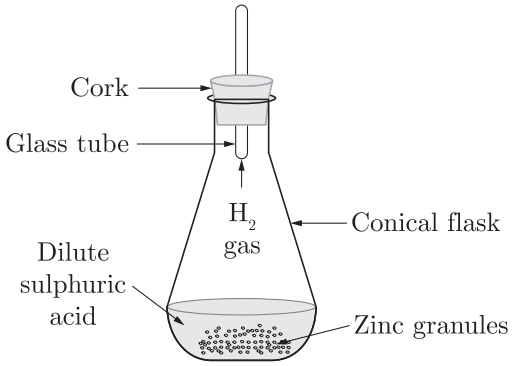
32. **Assertion :** Chemical equations can be made more informative.
Reason : We can write physical state of reactants and products, temperature and pressure, name of catalyst used etc.
(a) Both Assertion and Reason are True and Reason is the correct explanation of the Assertion.
(b) Both Assertion and 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 :** During the night the effect of root pressure in transport of water is more important.
Reason : Stomata is open during day, transpiration takes place which help in transport of water.
(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.

34. **Assertion :** The light of violet colour deviates the least and the light of red colour the most, while passing through a prism.
Reason : For a prism material, refractive index is highest for red light and lowest for the violet light.
(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.

35. Which one of the following can be used as an acid-base indicator by a visually impaired student?
(a) Litmus
(b) Turmeric
(c) Vanilla essence
(d) Petunia leaves

36. One day Sunita went in the science lab and she take few zinc granules in a conical flask and a test tube. She add dilute hydrochloric acid or sulphuric acid in it.



Which change is seen by Sunita in the above experimental process?

(a) Change in temperature
(b) Change in colour
(c) Evolution of gas
(d) Change in state

37. Which of the following is carried by lymph which is digested and absorbed from intestine?

(a) Fat (b) Protein
(c) Minerals (d) Carbohydrates

38. Which of the following parts of plants is the storehouse of energy?

(a) Flowers (b) Branches
(c) Roots (d) all of these

39. A concave mirror of focal length f (in air) is immersed in water $(\mu = 4/3)$. The focal length of the mirror in water will be-

(a) f (b) $\frac{4}{3}f$
(c) $\frac{3}{4}f$ (d) $\frac{7}{3}f$

40. You are given water, mustard oil, glycerine and kerosene. In which of these media, a ray of light incident obliquely at same angle would bend the most?

(a) Kerosene (b) Water
(c) Mustard oil (d) Glycerine

41. Transpiration helps :

(a) in the absorption
(b) in the upward movement of water minerals dissolved in it from roots to the leaves
(c) in temperature regulation
(d) All of the above

42. The functional unit of kidney is:

(a) Nephron (b) Neuron
(c) Glomerulus (d) Bowman's Capsule

43. A child standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

(a) Plane, convex and concave
(b) Convex, concave and plane
(c) Concave, plane and convex
(d) Convex, plane and concave

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

(a) At the principle focus of the lens
(b) At twice focal length
(c) At infinity
(d) Between the optical centre of the lens and its principle focus

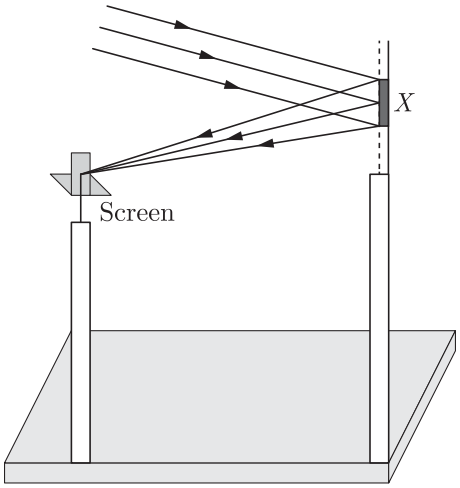
45. An object is placed at a distance of 30 cm from a convex mirror, the magnification produced is $\frac{1}{2}$. Where should the object be placed to get the magnification of $\frac{1}{3}$?

(a) -60 cm (b) 40 cm
(c) 50 cm (d) 60 cm

46. The power of a combination of two lenses XY is 5 D if the focal length of lens X is 15 cm. The focal length of lens Y is-

(a) 60 cm (b) -60 cm
(c) 50 cm (d) -10 cm

47. A student determines the focal length of a device X, by focusing the image of a far off object on the screen positioned as shown in figure The device X is a



(a) Convex lens (b) Concave lens
(c) Convex mirror (d) Concave mirror

48. Metal which does not react even with steam is :

(a) silver (b) iron
(c) magnesium (d) potassium

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)

Baking soda is also called sodium bicarbonate. This is the major constituent of baking powder.
Sodium chloride is used as one of the raw materials in the production of baking soda. Baking soda is commonly used to make crispy pakoras, etc., in the kitchen. It is also added for faster cooking. It is also used in the preparation of effervescent drinks and fruit salts and it is used as an antacid, it neutralises excess acid in the stomach.

49. The chemical name of baking soda is
(a) sodium hydrogen carbonate
(b) sodium hydroxide
(c) sodium carbonate decahydrate
(d) calcium oxychloride

50. Which of the following statements is correct regarding properties of baking soda?
(a) It is a yellow crystalline substance.
(b) It is non-corrosive in nature.
(c) It reacts with acids evolving hydrogen gas.
(d) All are correct

51. The temperature above which sodium bicarbonate decomposes to give sodium carbonate is
(a) 283 K
(b) 309 K
(c) 373 K
(d) 575 K

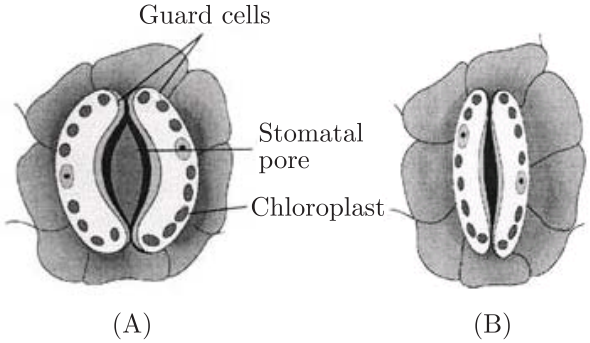
52. Baking powder is a mixture of
(a) sodium carbonate and ethanoic acid
(b) sodium hydrogen carbonate and ethanoic acid
(c) sodium carbonate and tartaric acid
(d) sodium hydrogen carbonate and tartaric acid

Case Based Questions: (53-56)

Some tiny pores are present on the surface of the leaves. Massive amounts of gaseous exchange take place in the leaves through these pores for the purpose of photosynthesis. But it is important to note here that exchange of gases occurs across the surface of stems, roots and leaves as well. Since, large amounts of water can also be lost through these, the plant closes these pores when it does not need carbon dioxide for photosynthesis. The opening and closing of the pores is a function of some specialized cells. These cells swell when water flows into them, causing the pore to open. Similarly, the pore closes if these cells get shrink.

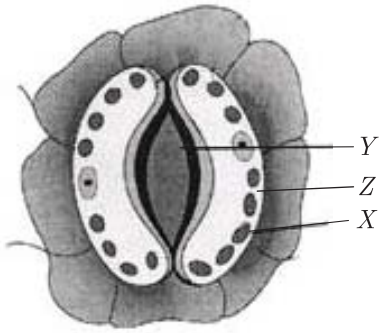
53. The exchange of oxygen and carbon dioxide in the leaf occurs through
(a) phloem
(b) stomata
(c) xylem
(d) alveoli

54. The given figure shows two states of a pore, opening and closing of these pores is a function of



(a) epidermis
(b) chlorophyll
(c) guard cells
(d) phloem cells

55. The labelling for the slide of leaf peel showing stomata by the four students who made the diagram and tabulated the labels, is as follows:



Choose the correct combination of plots provided in the following table.

	X	***Y***	***Z***
(a)	Chloroplast	Guard cell	Stoma
(b)	Chloroplast	Stoma	Guard cell
(c)	Guard cell	Stoma	Chloroplast
(d)	Stoma	Chloroplast	Guard cell

56. Which of the following statement(s) is (are) true about stomata?

I. These are typically found in leaves only.
II. Guard cells are responsible for regulating the size of the stomatal opening.
III. These control the exchange of gases not water vapours.
IV. These get closed at night to prevent water loss in plants.

(a) I and II only (b) II and IV only
(c) I, II and III only (d) I, III and IV only

Case Based Questions: (57-60)

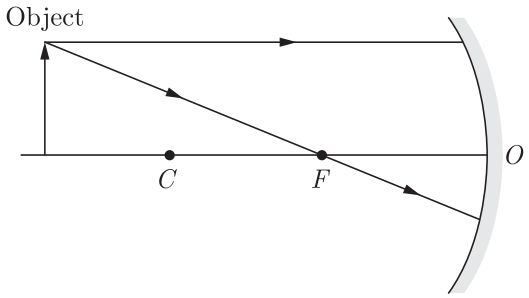
A real image (always inverted) is the one through which the rays of light actually pass after reflection from concave mirror and which can be formed on a screen. A virtual image (always erect) is the one through which the rays do not actually pass, although they appear to come from it. The position, nature and size of the image of an object formed by a concave mirror changes with the position of the object. The size of image may be determined by using a graph paper fixed on the screen.

Object	**Image**	**Nature of the image**
$u = \infty$	$v = f$	Real, inverted and highly diminished
$\infty > u > 2f$	$2f < v < \infty$	Real inverted and diminished
$u = 2f$	$v = 2f$	Real inverted and same size
$2f > u > f$	$2f < v < \infty$	Real inverted and enlarged
$u = f$	$v = \infty$	Real inverted and highly enlarged
$f > u > 0$	Behind the mirror	Virtual, erect and enlarged

57. Which of the following mirror is used by a dentist to examine a small cavity?

(a) Concave mirror
(b) Convex mirror
(c) Combination of (a) and (b)
(d) None of these

58. The image shows the path of incident rays to a concave mirror.



Where would the reflected rays meet for the image formation to take place?

(a) Between F and O (b) Beyond C
(c) Between C and F (d) Behind the mirror

59. A student conducts an activity using a concave mirror with focal length of 10 cm.
He placed the object 15 cm from the mirror. Where is the image likely to form?

(a) At 6 cm in front of the mirror
(b) At 6 cm behind the mirror
(c) At 30 cm behind the mirror
(d) At 30 cm in front of the mirror

60. Rekha placed a juice bottle at a distance of 20 cm in front of a convex mirror which has a focal length of 20 cm. Where is the image likely to form?

(a) At a distance of 10 cm in front of the mirror
(b) At focus in front of the mirror
(c) At a distance of 10 cm behind the mirror
(d) At focus behind the mirror

SAMPLE PAPER - 25 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(a)	Ch-1	31
2.	(c)	Ch-2	99
3.	(b)	Ch-3	107
4.	(a)	Ch-1	45
5.	(a)	Ch-2	43
6.	(b)	Ch-1	140
7.	(a)	Ch-1	35
8.	(d)	Ch-2	122
9.	(a)	Ch-2	126
10.	(b)	Ch-1	138
11.	(c)	Ch-4	208
12	(d)	Ch-4	57
13	(c)	Ch-4	24
14	(b)	Ch-4	134
15	(c)	Ch-4	136
16	(b)	Ch-4	149
17	(a)	Ch-5	24
18	(c)	Ch-5	173
19	(b)	Ch-5	40
20	(a)	Ch-5	41
21	(d)	Ch-5	42
22	(c)	Ch-5	New
23	(c)	Ch-5	New
24	(d)	Ch-6	16
25	(d)	Ch-2	107
26	(a)	Ch-2	128
27	(b)	Ch-3	27
28	(a)	Ch-3	40
29	(a)	Ch-2	141
30	(b)	Ch-3	98
31	(d)	Ch-2	163

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(a)	Ch-1	153
33	(a)	Ch-4	225
34	(d)	Ch-6	63
35	(c)	Ch-2	21
36	(a)	Ch-1	179
37	(a)	Ch-4	112
38	(d)	Ch-4	127
39	(a)	Ch-5	64
40	(d)	Ch-5	53
41	(d)	Ch-4	142
42	(a)	Ch-4	158
43	(c)	Ch-5	57
44	(b)	Ch-5	86
45	(a)	Ch-5	25
46	(b)	Ch-5	36
47	(d)	Ch-5	89
48	(a)	Ch-3	3
49	(a)	Ch-3	208
50	(b)	Ch-3	209
51	(c)	Ch-3	210
52	(d)	Ch-3	211
53	(b)	Ch-4	288
54	(c)	Ch-4	289
55	(b)	Ch-4	290
56	(b)	Ch-4	291
57	(a)	Ch-5	252
58	(c)	Ch-5	253
59	(d)	Ch-5	254
60	(c)	Ch-5	255