

Sample/Pre-Board Paper 9
Class X Term 1 Exam Nov -Dec 2021
Science (086)

Time: 90 Minutes

General Instructions:

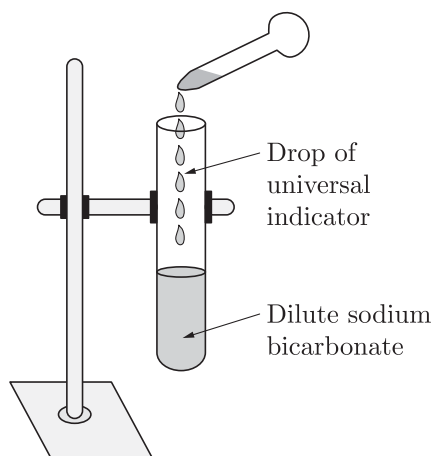
1. The question paper contains three sections.
2. Section A has 24 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 12 questions. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

Section A

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

1. A dilute ferrous sulphate solution was gradually added to the beaker containing acidified permanganate solution. The light purple colour of the solution fades and finally disappears.
Which of the following is the correct explanation for the observation?
(a) KMnO_4 is an oxidising agent, it oxidises FeSO_4 .
(b) FeSO_4 acts as an oxidising agent and oxidises KMnO_4 .
(c) The colour disappears due to dilution; no reaction is involved.
(d) KMnO_4 is an unstable compound and decomposes in presence of FeSO_4 to a colourless compound.
2. A student adds a few drops of the universal indicator to a dilute solution of sodium bicarbonate taken in a test tube.
3. What happens when calcium is treated with water?
 1. It does not react with water
 2. It reacts violently with water
 3. It reacts less violently with water
 4. Bubbles of hydrogen gas formed stick to the surface of calcium

(a) 1 and 2 (b) 2 and 3
(c) 3 and 4 (d) 4 and 1
4. Balancing of equations is based on:
(a) Avogadro's number
(b) Law of conservation of mass
(c) Principle of conservation of momentum
(d) Conditions for a chemical reaction to take place
5. 10 mL of a solution of NaOH is found to be completely neutralised by 8 mL of a given solution of HCl. If we take 20 mL of the same solution of NaOH, the amount of HCl solution (the same solution as before) required to neutralise it will be—
(a) 4 mL
(b) 8 mL
(c) 12 mL
(d) 16 mL
6. $\text{N}_2 + 3\text{H}_2 \longrightarrow 2\text{NH}_3$
In the above reaction and products are:



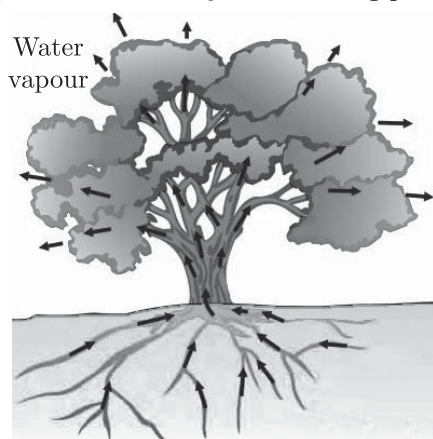
The colour of mixture of universal indicator and dilute sodium bicarbonate is:

- (a) Green (b) Yellow
(c) Violet (d) Blue

	Reactants	Products
(a)	N_2, H_2	NH_3
(b)	NH_3	N_2, H_2
(c)	N_2	H_2, NH_3
(d)	N_2NH_3	H_2

7. Magnesium ribbon is rubbed with sand paper before making it to burn. The reason of rubbing the ribbon is to:
- remove moisture condensed over the surface of ribbon.
 - generate heat due to exothermic reaction.
 - remove magnesium oxide formed over the surface of magnesium.
 - mix silicon from sand paper (silicon dioxide) with magnesium for lowering ignition temperature of the ribbon.
8. Which compound is formed due to the reaction of acid on metal oxides?
- Oxygen
 - Nitrogen
 - Salt
 - Ammonia
9. Which of the following statement is incorrect for acids?
- They give pink colour with phenolphthalein.
 - They give H^+ ions in water.
 - They are sour in taste.
 - They turn blue litmus red.
10. Which of the following reaction represents the rusting of iron?
- $Fe^{4+} \longrightarrow Fe^{3+} + e^-$
 - $C + O_2 \longrightarrow CO_2 + \text{Heat}$
 - $4Fe + 3O_2 \xrightarrow{\text{Moisture}} 2Fe_2O_3$
 - $C + O_2 \longrightarrow CO_2 + \text{Heat}$

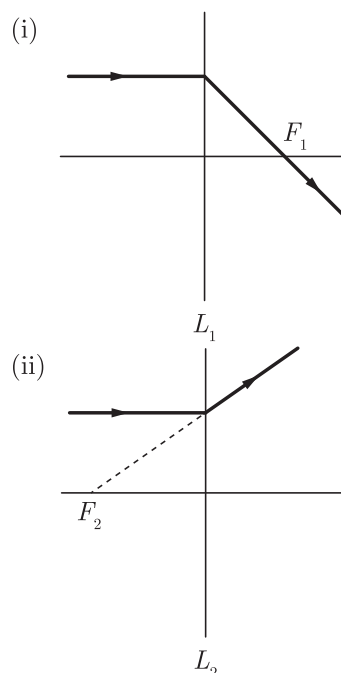
11. Which process is shown by the following picture?



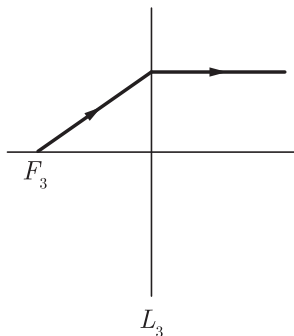
- Movement of food during photosynthesis in a tree
 - Movement of water during transpiration in a tree
 - Movement of minerals during in a tree
 - Movement of carbon dioxide during in a tree
12. Massive amounts of gaseous exchange takes place in the leaves through stomata for the purpose of
- Photosynthesis
 - Carrying carbon dioxide
 - Reduction of carbon dioxide
 - Generation of carbohydrates

13. Life process involves:
- Continuous process of maintaining functions of living organism.
 - All the activities being performed during life cycle of an organism.
 - Generation of energy for the purpose of metabolism.
 - Differs from individual to individual.
14. The following event(s) occur during photosynthesis
- Absorption of light energy by chlorophyll
 - Conversion of light energy to chemical energy
 - Reduction of carbon dioxide to carbohydrates
 - All of the above
15. Which gas turns lime water milky?
- Oxygen
 - Hydrogen
 - Carbon dioxide
 - Nitrogen
16. This process of break-down of glucose, a six-carbon molecule, into a three-carbon molecule pyruvate, takes place in
- Cytoplasm
 - Mitochondria
 - Golgi bodies
 - Endoplasmic reticulum
17. The magnification produced by a concave mirror-
- is always more than one
 - is always less than one
 - is always equal to one
 - may be less than or greater than one

18. The following figures show the path of light rays through three lenses marked L_1 , L_2 and L_3 and their focal points F_1 , F_2 and F_3 respectively.



(iii)



Which of the following diagram shows the concave lens properties?

- (a) (i)
- (b) (ii)
- (c) (iii)
- (d) (i), (ii)

19. When linear magnification is negative, the image formed by a concave mirror must be-

- (a) erect
- (b) virtual
- (c) real or virtual
- (d) real and inverted

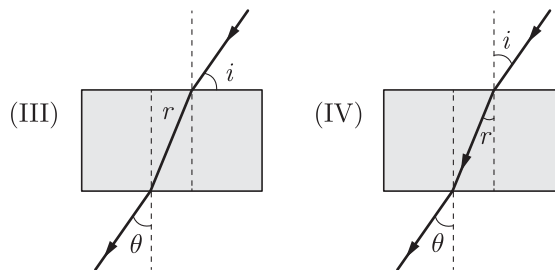
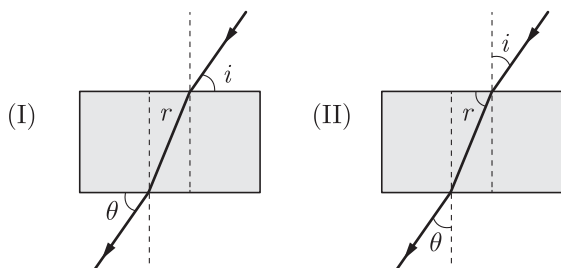
20. In a convex mirror, focus (F) and centre of curvature (C) of the mirror lie

- (a) behind the mirror
- (b) in front of the mirror
- (c) on the mirror
- (d) nothing can be decided

21. A ray of light falls on a plane mirror making an angle of 30° with normal. On deviation, the ray of light deviates through an angle of

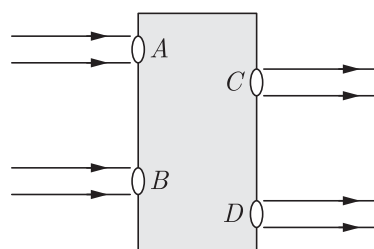
- (a) 120°
- (b) 140°
- (c) 160°
- (d) 180°

22. The path of a ray of light passing through a rectangular glass slab was traced and angles measured. Which one out of the following is the correct representation of an angle of incidence i , angle of refraction r and angle of emergence e as shown in the diagrams?



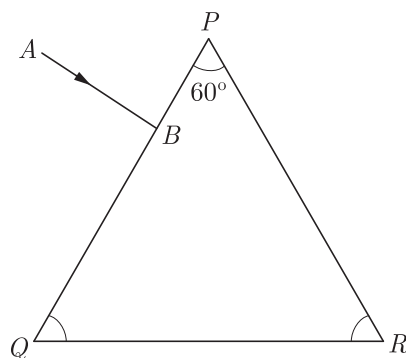
- (a) I
- (b) II
- (c) III
- (d) IV

23. Beams of light are incident through the holes A and B and emerge out of box through the holes C and D respectively as shown in figure. Which of the following could be inside the box?



- (a) A rectangular glass slab
- (b) A convex lens
- (c) A concave lens
- (d) A prism

24. In given figure, a light ray AB is incident normally on one face PQ of an equilateral glass prism. The angles at faces PR is:



- (a) 60°
- (b) 30°
- (c) 45°
- (d) 90°

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. The turmeric solution will turn red by an aqueous solution of-

(a) potassium acetate (b) copper sulphate
(c) sodium sulphate (d) ferric chloride

26. When an acid reacts with a metal than X gas is liberated. Here X is-

(a) Ammonia gas (b) Hydrogen gas
(c) Carbon dioxide gas (d) Methane gas

27. A metal occurs in nature as its ore X which on heating in air converts to Y . Y reacts with unreacted X to give the metal. The metal is :

(a) Hg (b) Cu
(c) Zn (d) Fe

28. Which of the following are correctly matched?

1.	Ductility	drawn into wire.
2.	Malleability	drawn into sheets.
3.	Good conductors	copper and mercury.
4.	Non-metals	solids or gases.

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

29. Which of the following is/are correct for olfactory indicators?

1. Their colour changes with acid or base.
2. Onion, vanilla or clove are examples.

(a) Only 1 (b) Only 2
(c) Both 1 and 2 (d) Neither 1 nor 2

30. Which among the following statements is incorrect for magnesium metal?

(a) It burns in oxygen with a dazzling white flame.
(b) It reacts with cold water to form magnesium oxide and evolves hydrogen gas.
(c) It reacts with hot water to form magnesium hydroxide and evolves hydrogen gas.
(d) It reacts with steam to form magnesium hydroxide and evolves hydrogen gas.

31. **Assertion :** Plaster of Paris is used by doctors by setting fractured bones.

Reason : When Plaster of Paris is mixed with water and applied around the fractured limbs, it sets into a hard mass.

(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.

32. **Assertion :** A chemical equation should be balanced.

Reason : Number of atoms of each element should be same on reactants as well as products side.

(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 :** Magnification of real images is taken negative.

Reason : Magnification is ratio of image distance and object distance.

(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. Which of the following gives the correct increasing order of acidic strength?

(a) Water < Acetic < Hydrochloric
(b) Water < Hydrochloric < Acetic
(c) Acetic < Water < Hydrochloric
(d) Hydrochloric < Water < Acetic

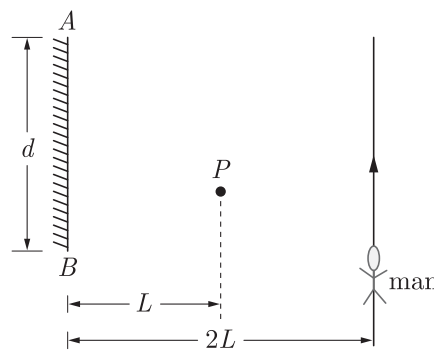
36. Which of the following statements about the given reaction are correct?



1. Iron metal is getting oxidised.
2. Water is getting reduced.
3. Water is acting as reducing agent.
4. Water is acting as oxidising agent.
(a) 1, 2 and 3 (b) 3 and 4
(c) 1, 2 and 4 (d) 2 and 4

37. Normally, in a healthy adult, the initial filtrate in the kidneys is about :
 (a) 100 L/day (b) 150 L/day
 (c) 180 L/day (d) 200 L/day
38. Main excretory organ of humans is?
 (a) Lungs (b) Skin
 (c) Kidney (d) Liver
39. A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located?
 (a) 30 cm (b) 40 cm
 (c) -30 cm (d) -40 cm
40. The speed of light in a transparent medium is 0.6 times that of its speed in vacuum. The refractive index of the medium is:
 (a) 1.66 (b) 1.96
 (c) 1.26 (d) 1.29
41. In plants, translocation of food and other substance take place through sieve tubes in
 (a) Upward direction
 (b) Lateral direction
 (c) Downward direction
 (d) Both upward and downward direction
42. The process of diffusion of solvent particles from the region of less solute concentration to a region of high solute concentration through semi-permeable membrane is known as
 (a) Diffusion (b) Osmosis
 (c) Translocation (d) Transpiration
43. If the power of a lens is +5 D, then its focal length is
 (a) +0.2 cm (b) -0.2 cm
 (c) +20 cm (d) -20 cm
44. A point source of light P is placed at a distance L in front of a mirror of width d hung vertically on a wall. A man walks in front of the mirror along a line parallel to the mirror at a distance $2L$ as shown in

the figure. The greatest distance over which he can see the image of the light source, in the mirror, is



- (a) $\frac{d}{2}$ (b) d
 (c) $2d$ (d) $3d$
45. The radius of curvature of a spherical mirror is 20 cm. the focal length of mirror is-
 (a) 10 cm (b) 20 cm
 (c) 30 cm (d) 40 cm
46. 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
47. Choose the correct relation between u , v and R for spherical mirrors.
 (a) $R = \frac{2uv}{u+v}$ (b) $R = \frac{2}{u+v}$
 (c) $R = \frac{2(u+v)}{(uv)}$ (d) None of these
48. The reactivity of iron, magnesium, sodium and zinc towards water are in order as:
 (a) $\text{Na} > \text{Mg} > \text{Zn} > \text{Fe}$
 (b) $\text{Fe} > \text{Mg} > \text{Na} > \text{Zn}$
 (c) $\text{Zn} > \text{Na} > \text{Mg} > \text{Fe}$
 (d) $\text{Mg} > \text{Na} > \text{Fe} > \text{Zn}$

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)

The reactivity series is a list of metals arranged in the order of their decreasing activities. The metal at the

top of the reactivity series is the most reactive and metal at the bottom is the least reactive. The more reactive metal displaces less reactive metal from its salt solution.

Activity series: Relative reactivities of metals		
K	Potassium	Most reactive
Na	Sodium	
Ca	Calcium	
Mg	Magnesium	
Al	Aluminium	
Zn	Zinc	Reactivity decreases
Fe	Iron	
Pb	Lead	
H	Hydrogen	
Cu	Copper	
Hg	Mercury	Least reactive
Ag	Silver	
Au	Gold	

transport in xylem which can be largely explained by simple physical forces, the translocation in phloem is achieved by utilising energy. Material like sucrose is transferred into phloem tissue using energy from ATP. This increases the osmotic pressure of the tissue causing water to move into it. This pressure moves the material in the phloem to tissues which have less pressure. This allows the phloem to move material according to the plant's needs. For example, in the spring, sugar stored in root or stem tissue would be transported to the buds which need energy to grow.

49. The metals which react with steam but not with hot water is
 (a) Al, Zn, Fe (b) K, Na, Mg
 (c) Ag and Au (d) Pb and Cu

50. Non-metals do not displace hydrogen from acids because
 (a) they are electron donor
 (b) they are electron acceptor
 (c) they have low tensile strength
 (d) they have low density

51. $\text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \longrightarrow$
 (a) $\text{HCO}_3(\text{s})$ (b) $\text{H}_2\text{CO}_3(\text{aq})$
 (c) $\text{HCO}_3(\text{aq})$ (d) $\text{H}_2\text{CO}_3(\text{s})$

52. Among the following, the correct arrangement of the given metals in ascending order of their reactivity is
 Zinc, Iron, Calcium, Potassium
 (a) $\text{Zinc} < \text{Iron} < \text{Calcium} < \text{Potassium}$
 (b) $\text{Potassium} < \text{Calcium} < \text{Iron} < \text{Zinc}$
 (c) $\text{Potassium} < \text{Zinc} < \text{Calcium} < \text{Iron}$
 (d) $\text{Potassium} < \text{Calcium} < \text{Zinc} < \text{Iron}$

Case Based Questions: (53-56)

This transport of soluble products of photosynthesis is called translocation and it occurs in the part of the vascular tissue known as phloem. Besides the products of photo-synthesis, the phloem transports amino acids and other substances. These substances are especially delivered to the storage organs of roots, fruits and seeds and to growing organs. The translocation of food and other substances takes place in the sieve tubes with the help of adjacent companion cells both in upward and downward directions. Unlike

53. The transportation of materials into phloem requires:
 (a) Amino acids (b) Food
 (c) Water (d) Energy
54. The translocation of food in plants takes place in:
 (a) Upward direction only
 (b) Downwards direction only
 (c) Leaves only
 (d) Both in upward and downward directions

55. The components which help in the translocation process in plants are:
 (a) Amino acid
 (b) Sieve tubes and companion cells
 (c) Fruit
 (d) Seeds

56. The phenomenon of transportation of food in plants in its dissolved form is called:
 (a) Translocation
 (b) Excretion
 (c) Transpiration
 (d) Nutrition

Case Based Questions: (57-60)

The ability of a lens to converge or diverge light rays depends on its focal length. For example, a convex lens of short focal length bends the light rays through large angles, by focussing them closer to the optical centre. Similarly, concave lens of very short focal length causes higher divergence than the one with longer focal length. The degree of convergence or divergence of light rays achieved by a lens is expressed in terms of its power. The power of a lens is defined as the reciprocal of its focal length. It is represented by the letter P . The power P of a lens of focal length f is given by

$$P = \frac{1}{f}$$

The SI unit of power of a lens is 'diopetre'. It is denoted by the letter D . If f is expressed in metres, then, power is expressed in dioptries. Thus, 1 diopetre is the power of a lens whose focal length is 1 metre. $1 \text{ D} = 1 \text{ m}^{-1}$. The power of a convex lens is positive and that of a concave lens is negative.

57. Which one of the following lens is a converging lens?

- (a) Flat lens
- (b) Bifocal lens
- (c) Convex lens
- (d) Concave lens

58. The power of a diversing lens is 2.0 D. The focal length of lens is:

- (a) +0.5 m
- (b) -50 cm
- (c) +500 mm
- (d) -40 cm

59. The focal length of a lens is +40 cm. The power of lens is:

- (a) +5.0 D
- (b) -2.5 D
- (c) +9.5 D
- (d) -9.5 D

60. The S.I. unit of power of a lens is:

- (a) Kwh
- (b) Meter
- (c) Watt
- (d) Diopetre

SAMPLE PAPER - 4 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(a)	Ch-1	64
2	(d)	Ch-2	178
3	(c)	Ch-3	49
4	(b)	Ch-1	8
5	(d)	Ch-2	3
6	(a)	Ch-1	87
7	(c)	Ch-1	83
8	(c)	Ch-2	88
9	(a)	Ch-2	65
10	(c)	Ch-1	109
11	(b)	Ch-4	143
12	(a)	Ch-4	35
13	(a)	Ch-4	3
14	(d)	Ch-4	66
15	(c)	Ch-4	68
16	(a)	Ch-4	69
17	(d)	Ch-5	73
18	(b)	Ch-5	45
19	(d)	Ch-5	92
20	(a)	Ch-5	93
21	(a)	Ch-5	94
22	(d)	Ch-5	122
23	(a)	Ch-5	126
24	(a)	Ch-6	37
25	(a)	Ch-2	59
26	(b)	Ch-2	61
27	(b)	Ch-3	106
28	(b)	Ch-3	111
29	(b)	Ch-2	36
30	(b)	Ch-3	74
31	(a)	Ch-2	172

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(b)	Ch-1	152
33	(a)	Ch-4	225
34	(d)	Ch-6	185
35	(a)	Ch-2	12
36	(c)	Ch-1	62
37	(c)	Ch-4	160
38	(c)	Ch-4	185
39	(c)	Ch-5	8
40	(b)	Ch-5	23
41	(d)	Ch-4	200
42	(b)	Ch-4	84
43	(c)	Ch-5	165
44	(d)	Ch-5	161
45	(a)	Ch-5	4
46	(c)	Ch-5	57
47	(a)	Ch-5	98
48	(a)	Ch-3	19
49	(a)	Ch-3	193
50	(b)	Ch-3	194
51	(c)	Ch-3	195
52	(a)	Ch-3	196
53	(d)	Ch-4	258
54	(d)	Ch-4	259
55	(b)	Ch-4	260
56	(a)	Ch-4	261
57	(c)	Ch-5	222
58	(b)	Ch-5	223
59	(a)	Ch-5	224
60	(d)	Ch-5	225