

**Sample/Pre-Board Paper 17**  
**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. When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate of copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of-  
(a) a combination reaction  
(b) a displacement reaction  
(c) a decomposition reaction  
(d) a double decomposition reaction
2. A student takes some zinc granules in a test tube and adds dilute hydrochloric acid to it. He would observe that the colour of the zinc granules changes to  
(a) Red  
(b) Black  
(c) Green  
(d) Yellow
3. 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
4. What happens when copper rod is dipped in iron sulphate solution?  
(a) The solution becomes blue in colour  
(b) No reaction takes place  
(c) The solution becomes pink in colour  
(d) A lot of heat will be released
5. 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
6.  $X + \text{Barium chloride} \longrightarrow \underset{\text{(White ppt)}}{Y} + \text{Sodium chloride}$   
Here  $X$  and  $Y$  are:  
(a)  $\text{NaSO}_4$ ,  $\text{BaSO}_4$   
(b)  $\text{BaSO}_4$ ,  $\text{Na}_2\text{SO}_4$   
(c)  $\text{BaSO}_2$ ,  $\text{NaSO}_4$   
(d)  $\text{Na}_2\text{SO}_4$ ,  $\text{BaSO}_4$
7. The oxidation and reduction takes place simultaneously in ..... reaction.  
(a) displacement  
(b) redox  
(c) combination  
(d) decomposition
8. What do we observe on pouring acetic acid on red and blue litmus papers?  
(a) Red litmus remains red and blue litmus turns red.  
(b) Red litmus turns blue and blue litmus remains blue.  
(c) Red litmus turns blue and blue litmus turns red.  
(d) Red litmus becomes colourless and blue litmus remains blue.
9. On diluting a solution of  $\text{pH} = 4.5$  its pH will  
(a) increase  
(b) decrease  
(c) remain same  
(d) firstly increases then decreases



10. Which of the following is an example of displacement reaction?

- (a)  $\text{NaOH} + \text{HNO}_3 \rightarrow \text{NaNO}_3 + \text{H}_2\text{O}$
- (b)  $\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$
- (c)  $2\text{Hg} + \text{O}_2 \rightarrow 2\text{HgO}$
- (d)  $\text{FeCl}_3 + 2\text{NaOH} \rightarrow 3\text{NaCl} + \text{Fe}(\text{OH})_3$

11. The respiratory route of air in the respiratory tract of human is:

- (a) nostrils  $\rightarrow$  pharynx  $\rightarrow$  larynx  $\rightarrow$  trachea  $\rightarrow$  alveoli.
- (b) alveoli  $\rightarrow$  pharynx  $\rightarrow$  larynx  $\rightarrow$  trachea  $\rightarrow$  nostrils.
- (c) alveoli  $\rightarrow$  larynx  $\rightarrow$  trachea  $\rightarrow$  pharynx  $\rightarrow$  nostrils.
- (d) nostrils  $\rightarrow$  trachea  $\rightarrow$  pharynx  $\rightarrow$  larynx  $\rightarrow$  alveoli.

12. Atmospheric nitrogen is converted into organic matter by with plant with the help of

- (a) Bacteria
- (b) Organic compounds
- (c) Air born viruses
- (d) Fertilizers

13. Which statement is not correct for single celled organism:

- (a) no specific organs for taking in food needed.
- (b) exchange of gases or removal of wastes may be needed.
- (c) single cell organisms are the newest form of life.
- (d) entire surface of the organism is in contact with the environment.

14. Which part of blood helps in clotting?

- (a) WBCs
- (b) RBCs
- (c) Platelets
- (d) Plasma

15. Arteries and veins are connected by a network of extremely narrow tubes called:

- (a) Sieve tubes
- (b) Capillaries
- (c) Vena cava
- (d) Valves

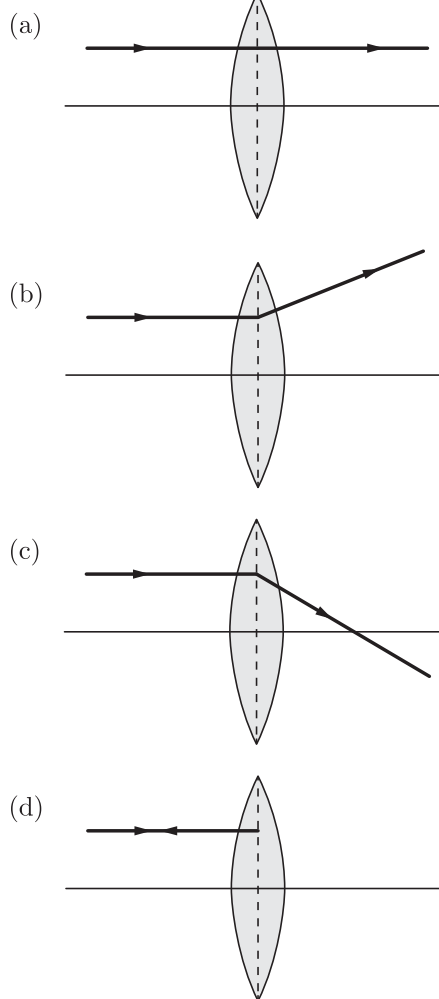
16. The pulmonary artery arises from the .....

- (a) right auricle
- (b) left auricle
- (c) left ventricle
- (d) right ventricle

17. A boy is standing in front of a plane mirror at a distance of 3 m from it. What is the distance between the boy and his image?

- (a) 3 m
- (b) 4.5 m
- (c) 6 m
- (d) None of these

18. Which of the following correctly shows refraction of a ray of light from a convex lens?



19. The minimum distance between the object and its real image for a concave mirror is-

- (a)  $f$
- (b)  $2f$
- (c)  $4f$
- (d) zero

20. When a ray of light enters a glass slab its wavelength

- (a) decreases
- (b) increases
- (c) remains unchanged
- (d) data are not complete

21. When light travels from one medium to another which of the following factors changes?

- (a) Wavelength
- (b) Frequency
- (c) Amplitude
- (d) None of these

22. A convex lens of focal length 40 cm is in contact with a concave lens of focal length 25 cm. The power of the combination is

- (a)  $-6.5 \text{ D}$
- (b)  $+6.5 \text{ D}$
- (c)  $+6.67 \text{ D}$
- (d)  $-1.5 \text{ D}$

23. If the refractive index of a medium is 1.2, then light will pass through this medium with a velocity of

- (a)  $2.5 \times 10^8 \text{ m} \cdot \text{s}^{-1}$
- (b)  $3 \times 10^8 \text{ m} \cdot \text{s}^{-1}$
- (c)  $3.6 \times 10^8 \text{ m} \cdot \text{s}^{-1}$
- (d)  $4.8 \times 10^8 \text{ m} \cdot \text{s}^{-1}$

24. Which of the following phenomena of light are involved in the formation of a rainbow?
- (a) Reflection, refraction and dispersion.
  - (b) Reflection, dispersion and total internal reflection.
  - (c) Refraction, dispersion and internal reflection.
  - (d) Dispersion, scattering and total internal reflection.

## 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. Which one of following property of base is incorrect?
- (a) Bases are bitter to taste.
  - (b) Bases are soapy and slippery to touch.
  - (c) Bases are not a good conductor of electricity.
  - (d) None of these.
26. Which of the following solutions has the lowers pH value?
- (a) 0.1 molar NaCl solution
  - (b) 0.01 molar  $\text{NaHCO}_3$  solution
  - (c) 0.001 molar  $\text{Na}_2\text{CO}_3$  solution
  - (d) 0.01 molar NaOH solution
27. 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
28. Which of the following property is generally not shown by metals?
- (a) Electrical conduction
  - (b) Sonorous in nature
  - (c) Dullness
  - (d) Ductility
29. A student prepared 20% sodium hydroxide solution in a beaker containing water. The observations noted by him are given below.
- I. Sodium hydroxide is in the form of pellets.
  - II. It dissolves in water readily.
  - III. The beaker appears cold when touched from outside.
  - IV. Red litmus paper turns blue when dipped into the solution.
- The correct observations are:
- (a) I, II and III
  - (b) II, III and IV
  - (c) III, IV and I
  - (d) I, II and IV
30. Sodium kept immersed in kerosene oil because-
- (a) Sodium is most reactive metal.
  - (b) Sodium is less reactive metal.
  - (c) Sodium is not a reactive metal.
  - (d) None of these.
31. **Assertion** : Sodium metal is obtained by electrolytic reduction.  
**Reason** : Sodium is a highly reactive metal.
- (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.
32. **Assertion** : A reducing agent is a substance which can either accept electron.  
**Reason** : A substance which helps in oxidation is known as reducing agent.
- (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) Assertion (A) is false but reason (R) is true.
33. **Assertion** : Amoeba is not an omnivore organism.  
**Reason** : Lion is a carnivore organism.
- (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** : For observing traffic at our back, we prefer to use a convex mirror.  
**Reason** : A convex mirror has a much larger field of view than a plane mirror or a concave mirror.
- (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. An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
- Baking powder
  - Lime
  - Ammonium hydroxide solution
  - Hydrochloric acid

36. Oxygen gas reacts with hydrogen to produce water. The reaction is represented by the equation:  

$$\text{O}_2(\text{g}) + \text{H}_2(\text{g}) \longrightarrow \text{H}_2\text{O}(\text{l})$$
 The above reaction is an example of

- Oxidation of hydrogen
  - Reduction of oxygen
  - Reduction of hydrogen
  - Redox reaction
- 1, 2 and 3
  - 2, 3 and 4
  - 1, 3 and 4
  - 1, 2 and 4

37. The process of conversion of glucose into pyruvic acid occurs in
- chloroplast
  - mitochondria
  - outside the cell
  - cytoplasm

38. Which organ is known as “Blood bank” ?
- Heart
  - Liver
  - Spleen
  - Kidney

39. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. the position of the image is-
- 6 cm
  - 9 cm
  - 8 cm
  - 7 cm

40. The refractive index of a medium ‘x’ with respect to ‘y’ is  $\frac{2}{3}$  and the refractive index of medium ‘y’ with respect to ‘z’ is  $\frac{4}{3}$ . The refractive index of medium ‘z’ with respect of ‘x’ is-

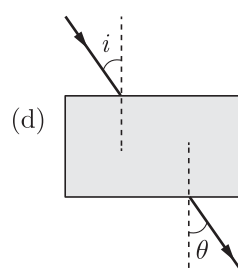
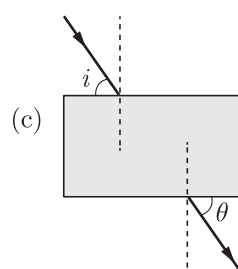
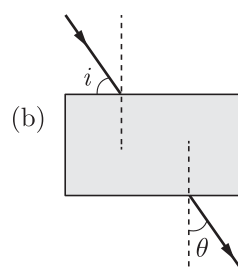
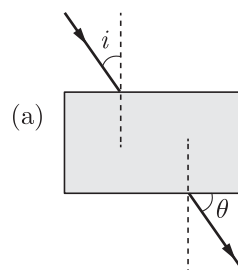
- $\frac{2}{9}$
- $\frac{9}{8}$
- $\frac{1}{3}$
- $\frac{5}{6}$

41. During respiration exchange of gases takes place in?
- Trachea and larynx
  - Throat and larynx
  - Alveoli and throat
  - Alveoli of lungs

42. Cells formed in the bone marrow are .....
- Erythrocytes only
  - Leucocyte only
  - Both erythrocytes and leucocyte
  - Platelets and blood cells

43. 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
- 20 cm
  - 10 cm
  - 12 cm
  - 5 cm

44. A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angles of incidence and the angle of emergence by following the labelling indicated in figure.



45. A spherical mirror and a thin spherical lens have each a focal length of  $-15$  cm. The mirror and the lens are likely to be-
- both concave
  - both convex
  - the mirror is concave and the lens is convex
  - the mirror is convex, but the lens is concave

46. The correct order of refractive index of various materials is :
- (a) Diamond > Ice > Alcohol > Rock salt  
 (b) Ice > Diamond > Rock salt > Alcohol  
 (c) Diamond > Rock salt > Alcohol > Ice  
 (d) Rock salt > Alcohol > Ice > Diamond
47. Which type of mirror is used by ENT specialists as a 'head mirror'?
- (a) Plane mirror (b) Convex mirror  
 (c) Concave mirror (d) None of these
48. Which one of the following can't be drawn into wires?
- (a) Cl (b) Fe  
 (c) Al (d) Cu

## 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)

A student takes the three solutions  $P$ ,  $Q$  and  $R$  and make the reaction of all these solution with phenolphthalein indicator and methyl orange indicator. He get the following result:

Solutions	Colour change with phenolphthalein indicator	Colour change with methyl orange indicator
$P$	Pink	Yellow
$Q$	Colourless	Orange
$R$	Colourless	Red

49. The acidic solution is
- (a)  $P$  (b)  $Q$   
 (c)  $R$  (d) None of these
50. The increasing of pH of solution  $P$ ,  $Q$  and  $R$  is
- (a)  $P < Q < R$  (b)  $R < P < Q$   
 (c)  $R < Q < P$  (d)  $Q < R < P$
51. Solutions  $P$  and  $Q$  could be
- (a) HCl and NaOH  
 (b) NaOH and NaCl  
 (c)  $\text{CH}_3\text{COOH}$  and  $\text{CH}_3\text{COONa}$   
 (d) HCl and  $\text{Na}_2\text{CO}_3$
52. When solution  $P$  added to the China rose indicator, the colour of the solution  $P$  changes to
- (a) Green (b) Dark red  
 (c) Pink (d) Colourless
53. Which among the following is the least toxic form of excretory product?
- (a) Urea (b) Uric acid  
 (c) Ammonia (d)  $\text{CO}_2$
54. An outline of principal events of urination is given below in a random manner.
- I Stretch receptors on the wall of the urinary bladder send signals to CNS.  
 II Bladder fills with urine and become distended.  
 III Micturition.  
 IV CNS passes on motor messages to initiate contraction of smooth muscle of bladder and simultaneous relaxation of urethral sphincter.
- The correct sequence of events is
- (a) I  $\rightarrow$  II  $\rightarrow$  III  $\rightarrow$  IV (b) IV  $\rightarrow$  III  $\rightarrow$  II  $\rightarrow$  I  
 (c) II  $\rightarrow$  I  $\rightarrow$  IV  $\rightarrow$  III (d) III  $\rightarrow$  II  $\rightarrow$  I  $\rightarrow$  IV
55. A person with no/less food and beverage intake, will have ..... in urine.
- (a) little glucose (b) less urea  
 (c) excess urea (d) little fat

### Case Based Questions: (53-56)

The organs of our excretory system help in releasing waste from our body. If these wastes are not removed, we may fall sick. Hence, wastes built up from cell activities and digestion need to be removed. The

56. Glomerular filtrate is first collected by
- (a) distal convoluted tubule  
 (b) proximal convoluted tubule  
 (c) Bowman's capsule  
 (d) Loop of Henle



**Case Based Questions: (57-60)**

The hotter air is lighter (less dense) than the cooler air above it and has a refractive index slightly less than that of the cooler air. Since the physical condition of the refracting medium (air) are not stationary, therefore, the light goes from rarer medium to denser medium in atmosphere. This phenomenon is called atmospheric refraction.

The twinkling of stars and advanced sunrise and delayed sunset are common examples of atmospheric refraction.

**57.** Stars appear to twinkle because of

- (a) movement of air
- (b) atmospheric refraction
- (c) both (a) and (b)
- (d) none of these

**58.** Which of the following is not caused because of atmospheric refraction?

- (a) Apparent image of Sun is formed closer to the Earth.
- (b) Dawn or dusk are formed
- (c) Sun can be seen 2 minutes before actual sunrise and 2 minutes after actual sunset.
- (d) Clouds look white

**59.** During sunset or sunrise the Sun appears reddish because

- (a) due to longer passage in atmosphere, even red light in the sunlight scatters
- (b) Sun produces red light at this time
- (c) at this time Sun is not very hot
- (d) none of these

**60.** When sunlight enters the atmosphere the colours which scatter first are

- (a) only red
- (b) red, orange and yellow
- (c) blue and green
- (d) violet, indigo and blue

## SAMPLE PAPER - 12 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(d)	Ch-1	134
2	(b)	Ch-2	181
3	(b)	Ch-3	111
4	(b)	Ch-1	24
5	(a)	Ch-2	12
6	(d)	Ch-1	103
7	(b)	Ch-1	93
8	(a)	Ch-2	101
9	(a)	Ch-2	78
10	(b)	Ch-1	119
11	(a)	Ch-4	77
12	(a)	Ch-4	43
13	(c)	Ch-4	11
14	(c)	Ch-4	95
15	(b)	Ch-4	96
16	(d)	Ch-4	97
17	(c)	Ch-5	82
18	(c)	Ch-5	110
19	(d)	Ch-5	133
20	(a)	Ch-5	142
21	(a)	Ch-5	143
22	(d)	Ch-5	160
23	(a)	Ch-5	162
24	(b)	Ch-6	2
25	(c)	Ch-2	77
26	(a)	Ch-2	73
27	(c)	Ch-3	128
28	(c)	Ch-3	24
29	(d)	Ch-2	95
30	(a)	Ch-3	84
31	(a)	Ch-3	149

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(d)	Ch-1	160
33	(d)	Ch-4	233
34	(a)	Ch-6	193
35	(d)	Ch-2	6
36	(d)	Ch-1	81
37	(d)	Ch-4	173
38	(c)	Ch-4	193
39	(a)	Ch-5	16
40	(b)	Ch-5	31
41	(d)	Ch-4	216
42	(d)	Ch-4	92
43	(c)	Ch-5	173
44	(d)	Ch-5	119
45	(a)	Ch-5	12
46	(c)	Ch-5	49
47	(c)	Ch-5	106
48	(a)	Ch-3	63
49	(c)	Ch-2	218
50	(a)	Ch-2	219
51	(b)	Ch-2	220
52	(a)	Ch-2	221
53	(b)	Ch-4	New
54	(c)	Ch-4	New
55	(b)	Ch-4	New
56	(c)	Ch-4	New
57	(b)	Ch-6	77
58	(d)	Ch-6	78
59	(a)	Ch-6	79
60	(d)	Ch-6	80

