

Sample/Pre-Board Paper 16
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

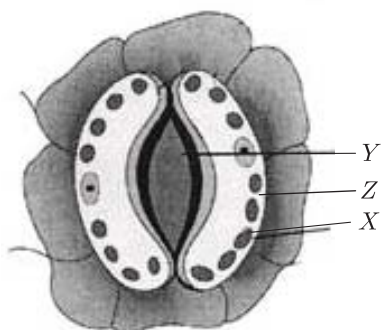
Section – A consists of 24 questions. Attempt any 20 questions from this section.
The first attempted 20 questions would be evaluated.

1. When the gases sulphur dioxide and hydrogen sulphide mix in the presence of water, the following reaction takes place:
$$\text{SO}_2 + 2\text{H}_2\text{S} \longrightarrow 2\text{H}_2\text{O} + 3\text{S}$$
Here, hydrogen sulphide is acting as:
(a) an oxidizing agent (b) a reducing agent
(c) a dehydrating agent (d) a catalyst
2. A student was provided with a pH chart by the teacher and asked to observe the colours corresponding to pH 1 and 14 respectively. The correct answer would be
(a) yellow, green (b) violet, orange
(c) red, blue (d) blue, mustard
3. An element X (atomic number 12) reacts with another element Y (atomic number 17) to form a compound Z . Which of the following statements are true regarding this compound?
 1. Molecular formula of Z is XY_2 .
 2. It is soluble in water.
 3. X and Y are joined by sharing of electrons.
 4. It would conduct electricity in the molten state.(a) 2 and 3 (b) 1 and 3
(c) 1, 3 and 4 (d) 1 and 4
4. Which of the following processes can not take place in the absence of oxygen?
(a) Combination (b) Displacement
(c) Combustion (d) All of the above
5. A sample of soil is mixed with water and allowed to settle. The clear supernatant solution turns the pH paper yellowish-orange. Which of the following would change the colour of this pH paper to greenish-blue?
(a) Lemon Juice (b) Vinegar
(c) Common salt (d) An antacid
6. The balancing chemical equation of following statement is:
“Silver bromide on exposure to sunlight decomposes into silver and bromine”.
(a) $2\text{AgBr} \longrightarrow 2\text{Ag} + \text{Br}$
(b) $2\text{AgBr} \xrightarrow{\text{Sunlight}} 2\text{Ag} + \text{Br}_2$
(c) $2\text{AgBr} \xrightarrow{\text{Sunlight}} \text{Ag} + \text{Br}_2$
(d) $\text{AgBr} \xrightarrow{\text{Sunlight}} \text{Ag} + 2\text{Br}$
7. Which one of the following is the decomposition reaction?
(a) $\text{H}_2 + \text{Cl}_2 \xrightarrow{\text{Sunlight}} 2\text{HCl}$
(b) $2\text{Mg} + \text{O}_2 \xrightarrow{\text{Heat}} 2\text{MgO}$
(c) $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2$
(d) $2\text{KClO}_3 \longrightarrow 2\text{KCl} + 3\text{O}_2$
8. In a locality, hard water, required for an experiment, is not available. However, the following salts are available in the school laboratory:
 1. Sodium sulphate
 2. Calcium sulphate
 3. Magnesium chloride
 4. Sodium chloride
 5. Calcium chloride
 6. Potassium sulphateWhich of the above may be dissolved in water to obtain hard water for the experiment?
(a) 2, 3 and 5 (b) 1, 2 and 5
(c) 1, 2, 4 and 6 (d) 3 and 5 only
9. 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.



10. Which of the following reactions involves the combination of two elements?
- $\text{CaO} + \text{CO}_2 \longrightarrow \text{CaCO}_3$
 - $4\text{Na} + \text{O}_2 \longrightarrow 2\text{N}_2\text{O}$
 - $\text{SO}_2 + \frac{1}{2}\text{O}_2 \longrightarrow \text{SO}_3$
 - $\text{NH}_3 + \text{HCl} \longrightarrow \text{NH}_4\text{Cl}$

11. 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:

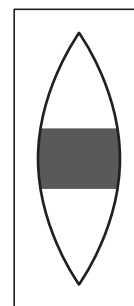


Choose the correct combination of plots provided in the following table.

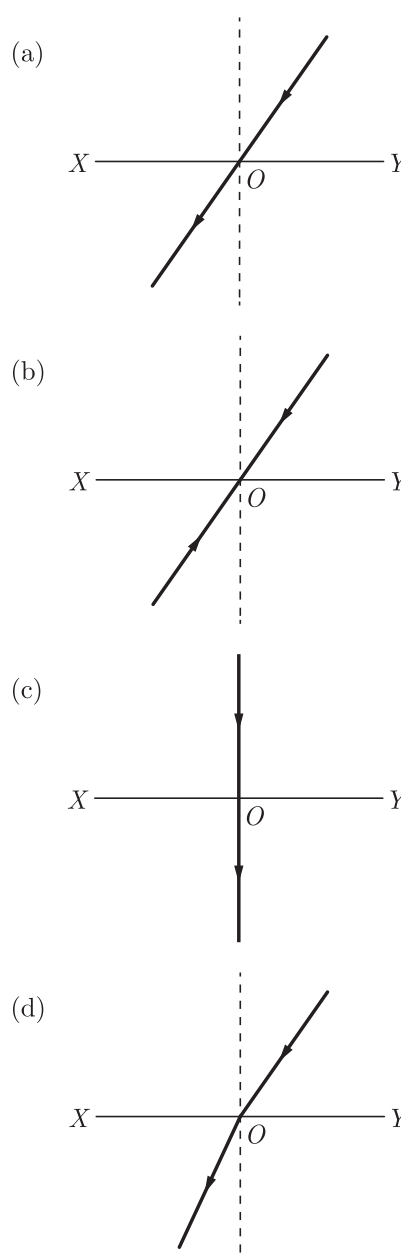
	X	Y	Z
(a)	Chloroplast	Guard cell	Stoma
(b)	Chloroplast	Stoma	Guard cell
(c)	Guard cell	Stoma	Chloroplast
(d)	Stoma	Chloroplast	Guard cell

12. Inorganic nitrates or nitrites helps the plants for the synthesis of:
- Carbohydrates
 - Nitrogen
 - Carbon dioxide
 - Protein
13. The process of break-down of food sources for cellular needs is known as
- Respiration
 - Molecular breakup
 - Excretion
 - Molecular process
14. Cells formed in the bone marrow are
- Erythrocytes only
 - Leucocyte only
 - Both erythrocytes and leucocyte
 - Platelets and blood cells
15. The normal rate of heart beat in an adult is per minute.
- 67 times
 - 72 times
 - 90 times
 - 100 times
16. Arteries are the vessels which carry blood away from the
- Various body parts to the heart
 - Heart to various organs of the body
 - Heart to lungs
 - Lungs to heart

17. If the central portion of a convex lens is wrapped in black paper as shown in the figure



- No image will be formed by the remaining portion of the lens
 - The full image will be formed but it will be less bright
 - The central portion of the image will be missing
 - There will be two images each produced by one of the exposed portions of the lens
18. No refraction occurs at the boundary that separates two media of equal refractive indices. Which of the following figures shows such type of refraction?



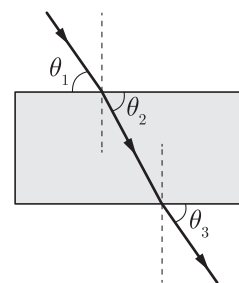
19. A Convex mirror has a focal length f . A real object placed at a distance f in front of it from the pole produces an image at
 (a) infinity (b) f
 (c) $\frac{f}{2}$ (d) $2f$
20. When sun rays are focussed with a convex lens, a sharp, bright spot is observed at its focus. What does this spot indicate?
 (a) The real image of the sun.
 (b) The virtual image of the sun.
 (c) An optical illusion produced by the convex lens.
 (d) The magnified image of the sun.
21. A convex lens has a focal length of 0.5 m. It has to be combined with a second lens, so that the combination has a power of 1.5 dioptre. Which of the following could be the second lens?
 (a) A concave lens of focal length 2 m.
 (b) Another convex lens of focal length 0.5 m.
 (c) A convex lens of focal length 0.5 m.
 (d) A convex lens of focal length 2 m.
22. The velocity of light in a medium is $2 \times 10^8 \text{ m-s}^{-1}$. Refractive index of the medium is
 (a) 1 (b) 1.1
 (c) 1.4 (d) 1.5
23. The power of combination of two lenses of powers $+1.5 \text{ D}$ and -2.5 D is
 (a) $+1.5 \text{ D}$ (b) -2.5 D
 (c) -1 D (d) $+1 \text{ D}$
24. Which phenomenon is not explained on the basis of scattering of light?
 (a) White colour of clouds
 (b) Blue colour of clear sky
 (c) Red colour of danger signals
 (d) Advanced sunrise

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 of the following are used as an antacid to reduce acidity in stomach?
 (a) Sodium carbonate and magnesium hydroxide
 (b) Magnesium hydroxide and sodium hydroxide
 (c) Sodium bicarbonate and calcium hydroxide
 (d) Sodium bicarbonate and magnesium hydroxide
26. The schematic diagram is given below :
- $$\begin{array}{c}
 \text{A} \xrightleftharpoons[\text{Cool}]{\text{Heat}} \text{B} + \text{HCl} \\
 \text{(solid)} \qquad \qquad \qquad \text{(vapour)} \quad \text{(vapour)} \\
 \downarrow \text{Heat} \quad \text{NaOH(aq)} \\
 \text{C} \xrightarrow{\text{HCl (conc.)}} \text{D} \xrightarrow[\text{Shake well}]{\text{H}_2\text{O}} \text{E(aq)} \\
 \text{(Gas)} \qquad \qquad \qquad \qquad \qquad \text{(acidic solution)}
 \end{array}$$
- Which of the following is an incorrect statement?
 (a) A and E are chemically same.
 (b) A and D are chemically same.
 (c) D and E are chemically same.
 (d) C and E are chemically same.
27. metal has highest melting point.
 (a) Tungsten (b) Sodium
 (c) Silver (d) Copper
28. 1 kg of iron occupies less space compared to 1 kg of sponge. Why?
 (a) Iron has more density than sponge
 (b) Iron has less density than sponge
 (c) Iron and sponge have equal densities
 (d) None of the above
29. Read the following statements:
 I. When a red litmus paper is dipped into the reaction mixture of a saponification reaction, it turns blue and the reaction is exothermic.
 II. When a blue litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is exothermic.
 III. When a red litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.
 IV. When a blue litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.
 Which of the above statements are correct?
 (a) I and II
 (b) II and III
 (c) III and IV
 (d) I and IV

30. Substance that can be beaten into thin are called
- (a) Malleable (b) Ductile
(c) Liquid (d) None of these
31. **Assertion :** Solder is an alloy of lead and copper.
Reason : It has a high melting point.
- (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 :** Corrosion of iron is commonly known as rusting.
Reason : Corrosion of iron occurs in presence of water and air.
- (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 :** in the daytime, CO_2 generated during respiration is used up for photosynthesis.
Reason : There is no CO_2 release during day.
- (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 :** The twinkling of star is due to reflection of light.
Reason : The velocity of light changes while going from one medium to the 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. Which one of the following types of medicines is used for treating indigestion?
- (a) Antibiotic (b) Analgesic
(c) Antacid (d) Antiseptic
36. The necessary conditions for combustion process to occur are
1. availability of air/oxygen.
 2. availability or air/oxygen and fuel.
 3. temperature of fuel below ignition temperature.
 4. temperature of fuel above ignition temperature.
- Select the correct alternative.
- (a) 1 and 2 (b) 2 and 4
(c) 3 and 1 (d) 4 and 1
37. Proteins \xrightarrow{A} Peptones
Identify the enzyme A involved in the above reaction.
- (a) Lipase (b) Pepsin
(c) Bile juice (d) Salivary amylase
38. By which cell the process of opening and closing of stomata is controlled?
- (a) Epidermal Cell (b) Guard Cell
(c) Accessory Cell (d) Leaf Cell
39. A concave lens of focal length 15 cm forms an 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
40. With respect to air, the refractive index of ice is 1.31 and that of rock salt is 1.54. the refractive index of rock salt with respect to ice is-
- (a) 1.25 (b) 1.18
(c) 1.90 (d) 1.40
41. Breaking down of glucose in the presence of oxygen produces ?
- (a) Carbon dioxide (b) Energy
(c) Water (d) All of the above
42. Amphibians or many reptiles havehearts.
- (a) two-chambered (b) three-chambered
(c) four-chambered (d) five-chambered
43. Velocity of light in air is 3×10^8 m/s. While its velocity in a medium is 1.5×10^8 m/s. Then, refractive index of this medium is
- (a) 3 (b) 5
(c) 0.5 (d) 2
44. A student, while doing the experiment on tracing the path of ray of light passing through a rectangular glass slab, measured the three angles marked as θ_1 , θ_2 and θ_3 in figure. His measurements could be correct if he were to find :



- (a) $\theta_1 < \theta_2 < \theta_3$
(b) $\theta_1 < \theta_2$, but $\theta_1 = \theta_3$
(c) $\theta_1 > \theta_2 > \theta_3$
(d) $\theta_1 > \theta_2$ but $\theta_2 = \theta_3$

45. Where should an object be placed in front of a convex lens to get a real image of the size of the object?
- At the principal focus of the lens
 - At twice the focal length
 - At infinity
 - Between the optical centre of the lens and its principal focus.
46. A full length of a distant tall building can definitely be seen by using
- a concave mirror
 - a convex mirror
 - a plane mirror
 - both concave as well as plane mirror
47. The inner shining surface of a steel spoon serves as a
- Plane mirror
 - Concave mirror
 - Convex mirror
 - Any one of the above
48. Which of the following is not the property of non-metals?
- They are ductile.
 - They are a bad conductor of electricity.
 - They are non-sonorous.
 - They are brittle.

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 pH of a solution is a measure of its hydrogen ion (H^+) concentration. It is measured generally using pH scale. The values on pH scale ranges from 0 to 14. A pH of 1 is very acidic and corresponds to a high concentration of H^+ ions. A pH of 14 is very basic and corresponds to a low concentration of H^+ ions. The pH of a neutral solution is 7. The table given below shows the pH and H^+ ion concentration of some common aqueous solutions. The leftmost column shows the number of moles of H^+ ions in 1 mole of liquid.

The pH and Hydrogen ion (H^+) Concentration of Some Solutions

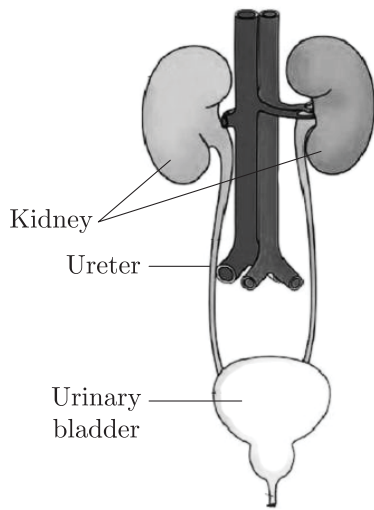
H^+ Concentration (Moles)	pH	Solution
10^{-1}	1	
10^{-2}	2	Gastric (stomach) juice, cola, lemon juice
10^{-3}	3	Vinegar
10^{-4}	4	Tomato juice
10^{-5}	5	Black coffee, rain water
10^{-6}	6	Urine
10^{-7}	7	Pure water
10^{-8}	8	Sea water
10^{-9}	9	Baking soda
10^{-10}	10	
10^{-11}	11	Milk of magnesia

10^{-12}	12	Household bleach
10^{-13}	13	Oven cleaner
10^{-14}	14	

49. How is the hydrogen ion concentration and pH related to each other?
- They are inversely proportional
 - They are directly proportional
 - They are equal
 - They have no relation
50. Among the given solutions in the above table, the most basic in nature is
- pure water
 - oven cleaner
 - household bleach
 - gastric juice
51. The acid having highest hydrogen ion concentration is one with
- pH = 2.5
 - pH = 1.8
 - pH = 7
 - pH = 10
52. Which of the following acids is used in making of vinegar?
- Nitric acid
 - Sulphuric acid
 - Formic acid
 - Acetic acid

Case Based Questions: (53-56)

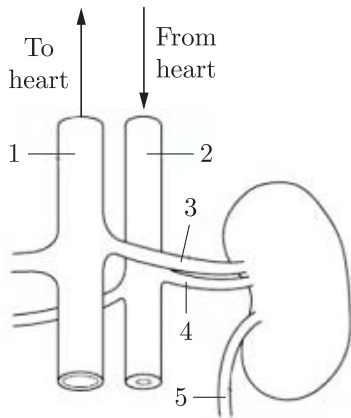
The excretory system is a passive biological system that removes excess, unnecessary materials from the body fluids of an organism, so as to help maintain internal chemical homeostasis and prevent damage to



(d)	5	3
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53. Which among the following is the storage organ for urine?
 (a) Urter (b) Kidney
 (c) Urinary bladder (d) Urethra
54. The main function of ureter is
 (a) contain urine till is released out
 (b) carry urine from kidney to urinary bladder
 (c) guard the urethra
 (d) passage through which urine is excreted out of the body

55. The diagram shows a kidney and its associated vessels.



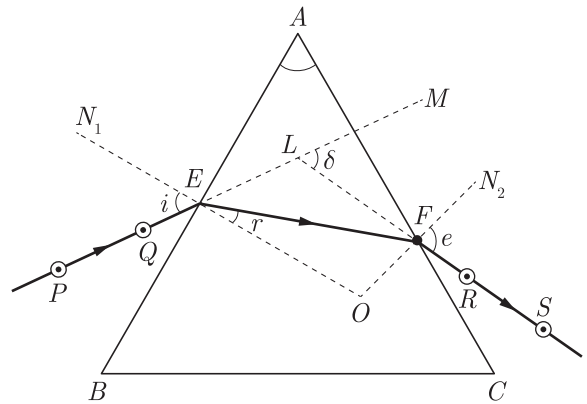
Which structure have the most and least urea concentration?

	Most	Least
(a)	1	2
(b)	4	1
(c)	4	3

56. If Henle's loop were absent from mammalian nephron, which one of the following to be expected?
 (a) There will be no urine formation
 (b) There will be hardly any change in the quality and quantity of urine formed
 (c) The urine will be more concentrated
 (d) The urine will be more dilute

Case Based Questions: (57-60)

Refer to the path of rays of light through a glass prism. Now answer the following questions.



57. A glass prism has
 (a) six rectangular surfaces
 (b) four rectangular surfaces
 (c) two triangular bases and three rectangular surfaces
 (d) none of the above.
58. In passing through a glass prism, a ray of light undergoes how many refractions?
 (a) One (b) Two
 (c) Three (d) Four
59. Two refractions on passing through the prism occur at
 (a) E and A (b) E and B
 (c) A and B (d) E and F
60. Angle of deviation is
 (a) $\angle MLF$ (b) $\angle FEO$
 (c) $\angle LEF$ (d) none of these

SAMPLE PAPER - 11 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(b)	Ch-1	122
2	(c)	Ch-2	179
3	(d)	Ch-3	105
4	(c)	Ch-1	22
5	(d)	Ch-2	11
6	(b)	Ch-1	100
7	(d)	Ch-1	92
8	(a)	Ch-2	100
9	(c)	Ch-2	77
10	(b)	Ch-1	117
11	(b)	Ch-4	290
12	(d)	Ch-4	42
13	(a)	Ch-4	10
14	(d)	Ch-4	92
15	(b)	Ch-4	93
16	(b)	Ch-4	94
17	(b)	Ch-5	81
18	(a)	Ch-5	109
19	(c)	Ch-5	132
20	(a)	Ch-5	140
21	(d)	Ch-5	141
22	(d)	Ch-5	158
23	(c)	Ch-5	159
24	(d)	Ch-6	1
25	(d)	Ch-2	46
26	(b)	Ch-2	60
27	(a)	Ch-3	126
28	(a)	Ch-3	28
29	(a)	Ch-2	94
30	(a)	Ch-3	83
31	(d)	Ch-3	148

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(b)	Ch-1	159
33	(a)	Ch-4	232
34	(d)	Ch-6	192
35	(c)	Ch-2	4
36	(b)	Ch-1	79
37	(b)	Ch-4	167
38	(b)	Ch-4	192
39	(c)	Ch-5	15
40	(b)	Ch-5	30
41	(d)	Ch-4	215
42	(b)	Ch-4	91
43	(d)	Ch-5	172
44	(b)	Ch-5	120
45	(b)	Ch-5	11
46	(b)	Ch-5	50
47	(b)	Ch-5	105
48	(a)	Ch-2	46
49	(a)	Ch-2	213
50	(b)	Ch-2	214
51	(b)	Ch-2	215
52	(d)	Ch-3	216
53	(c)	Ch-4	New
54	(b)	Ch-4	New
55	(d)	Ch-4	New
56	(d)	Ch-4	New
57	(b)	Ch-6	69
58	(b)	Ch-6	70
59	(d)	Ch-6	71
60	(a)	Ch-6	72