

Sample/Pre-Board Paper 29
Class X Term 1 Exam Nov -Dec 2021
Science (086)

Time: 90 Minutes

General Instructions:

- The question paper contains three sections.
- Section A has 24 questions. Attempt any 20 questions.
- Section B has 24 questions. Attempt any 20 questions.
- Section C has 12 questions. Attempt any 10 questions.
- All questions carry equal marks.
- 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.

- What happens when a piece of zinc metal is added to copper sulphate solution?
 (a) Decomposition reaction
 (b) Double displacement reaction
 (c) Displacement reaction
 (d) Precipitation reaction
- A student takes about 6 ml of distilled water in each of the four test tubes *A*, *B*, *C* and *D*, then dissolves in equal amount four different salts name sodium chloride in *A* Potassium Chloride in *B*, Calcium Chloride in *C* and magnesium chloride in *D*. He then adds 10 drop of soap solution to each test tube and shakes its contents. The test tube(s) in which he would observe a good amount of lather is:
 (a) *A* and *B* (b) Only *A*
 (c) *C* and *D* (d) Only *B*
- Four metals A, B, C and D are tested with water steam and dilute hydrochloric acid and its observation is listed below.

Metal	Reaction with water	Reaction with steam	Reaction with dilute
A	No reaction	reaction	reaction
B	No reaction	No reaction	reaction
C	reaction	reaction	reaction
D	No reaction	No reaction	No reaction

Between which two metals should hydrogen be placed in the series?
 (a) A and B (b) B and C
 (c) A and C (d) C and D
- $\text{PCl}_5(\text{s}) + \text{XH}_2\text{O}(\text{l}) \longrightarrow \text{YH}_3\text{PO}_4(\text{aq}) + \text{ZHCl}(\text{aq})$
 The value of *X*, *Y* and *Z* are:
 (a) *X*-4, *Y*-3, *Z*-3 (b) *X*-4, *Y*-1, *Z*-5
 (c) *X*-1, *Y*-2, *Z*-3 (d) *X*-5, *Y*-1, *Z*-2
- Identify the correct representation of reaction occurring during chlor-alkali process.
 (a) $2\text{NaCl}_{(\text{l})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{l})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
 (b) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{aq})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
 (c) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
 (d) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{aq})} + \text{H}_{2(\text{aq})}$
- Which of the following is not a chemical change?
 (a) Burning of a candle. (b) Cooking a food
 (c) Sublimation (d) Germination of seeds
- Which one of the following is the example of precipitation reaction?
 (a) $\text{Cu}(\text{s}) + 2\text{AgNO}_3(\text{aq}) \longrightarrow \text{Cu}(\text{NO}_3)_2(\text{aq}) + 2\text{Ag}(\text{s})$
 (b) $\text{CuCO}_3(\text{s}) \xrightarrow{\text{Heat}} \text{CuO}(\text{s}) + \text{CO}_2(\text{g})$
 (c) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \longrightarrow 2\text{NH}_3(\text{g})$
 (d) $\text{AgNO}_3(\text{aq}) + \text{NaCl}(\text{aq}) \longrightarrow \text{AgCl}(\text{s}) + \text{NaNO}_3(\text{aq})$
- Which of the following pair is incorrect?

	Substance	pH
(a)	Hydrochloric acid	1.0
(b)	Vinegar	2.8
(c)	Lime water	11
(d)	Stomach acid	1

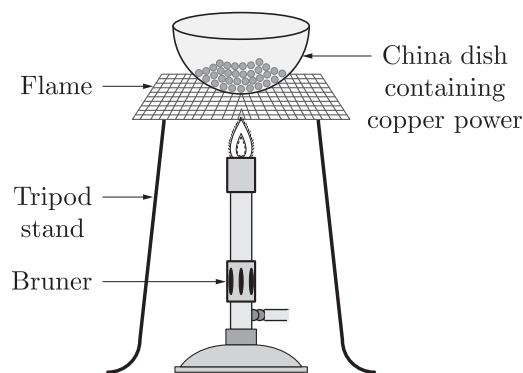
9. Which one of the following is used for bleaching cotton and linen in textile industry?
 (a) Caustic soda (b) Bleaching powder
 (c) Baking soda (d) Washing soda
10. What happens when copper rod is dipped in iron sulphate solution?
 (a) Copper displaces iron
 (b) Blue colour of copper sulphate solution is obtained
 (c) No reaction takes place
 (d) Reaction is exothermic
11. Conversion of large fat droplets into smaller droplets are
 (a) Neutralisation (b) Assimilation
 (c) Emulsification (d) Anabolism
12. From the mouth the food is taken to the stomach through
 (a) Bile duct (b) Pancreas
 (c) Diaphragm (d) Oesophagus
13. Autotrophic organism requires for their survival.
 (a) only carbon dioxide
 (b) water and sunlight
 (c) both (a) and (b)
 (d) None of the Above
14. The kidney is associated with the cup-shaped end of a coiled tube called?
 (a) Glomerulus
 (b) Bowman's capsule
 (c) collecting duct
 (d) none of the above
15. The richest natural source of minerals for plants is
 (a) chemical fertilizers (b) soil
 (c) air (d) water
16. Plants use the energy stored in ATP to accomplish the process of transportation of
 (a) Water and minerals
 (b) Carbon dioxide
 (c) Oxygen
 (d) Food
17. 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
18. If the refractive indices for water and diamond relative to air are 1.33 and 2.4 respectively, then the refractive index of diamond relative to water is-
 (a) .55 (b) 1.80
 (c) 3.19 (d) None of these
19. A convex lens of focal length 25 cm and a concave lens of focal length 10 cm are placed in close contact with each other. The power of this combination is-
 (a) 2 D (b) 6 D
 (c) -6 D (d) 9 D
20. A student wants to project the image of a candle flame on a screen 80 cm in front of a mirror by keeping the candle flame at a distance of 20 cm from its pole. The magnification of the image produced is-
 (a) -4 (b) -2
 (c) -6 (d) -1
21. A 4.5 cm needle is placed 12 cm away from a convex mirror of focal length 15 cm. The location of the image is-
 (a) 6.7 cm (b) 4.5 cm
 (c) 9.2 cm (d) 5 cm
22. The focal length of a concave mirror depends on:
 (a) The radius of curvature of the mirror
 (b) The object distance from the mirror
 (c) The image distance from the mirror
 (d) Both the image and the object distance
23. Focal length (f) is the distance of principal focus from of mirror.
 (a) Centre of curvature
 (b) Focus principal (F)
 (c) Pole (P)
 (d) None
24. What is the order of shortest visible wavelength?
 (a) 3000 Å (b) 4000 Å
 (c) 6500 Å (d) 8000 Å

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 following tablets are used by a person suffering from acidity?
 (a) Antacid (b) Antabuse
 (c) Antasalt (d) None of these
26. When you add a few drops of acetic acid to a test-tube containing sodium bicarbonate powder, which one of the following is your observation?
 (a) No reaction takes place.
 (b) A colourless gas with pungent smell is released with brisk effervescence.
 (c) A brown coloured gas is released with brisk effervescence.
 (d) Formation of bubbles of a colourless and odourless gas.
27. Rods of carbon and copper are hammered simultaneously. Which property of carbon is responsible for carbon rod breaking down into pieces?
 (a) Brittle (b) Ductility
 (c) Malleability (d) Lustre
28. Which of the following is not a property of ionic compounds?
 (a) They have low melting points.
 (b) They are solids.
 (c) They are soluble in water
 (d) They are good conductors in molten state.
29. When $\text{Ca}(\text{OH})_2$ reacts with $\text{CO}_2(\text{g})$, it will give $\text{CaCO}_3(\text{s})$ and $\text{H}_2\text{O}(\text{l})$. The nature of CaCO_3 is
 (a) acidic (b) basic
 (c) neutral (d) All are possible
30. Which of the following elements makes iron hard and strong?
 (a) carbon (b) oxygen
 (c) water (d) magnesium
31. **Assertion :** Limestone, chalk and marble react with acids to form salt, carbon dioxide and water.
Reason : Limestone, chalk and marble are different forms of calcium carbonate.
 (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 :** 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 :** Ethanol is obtained during the anaerobic process of respiration.
Reason : This is due to presence of oxygen and it takes place in the mitochondria.
 (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 :** Blue colour of sky appears due to scattering of blue colour.
Reason : Blue colour has longest wave length in visible spectrum.
 (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. Identify the correct representation of reaction occurring during chlor-alkali process.
 (a) $2\text{NaCl}_{(\text{l})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{l})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
 (b) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{aq})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
 (c) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{aq})} + \text{H}_{2(\text{aq})}$
 (d) $2\text{NaCl}_{(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})} \rightarrow 2\text{NaOH}_{(\text{aq})} + \text{Cl}_{2(\text{g})} + \text{H}_{2(\text{g})}$
36. A small amount of copper powder is heated as shown in the figure.



Which reaction shows the above process?

- (a) $2\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$
 (b) $\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$
 (c) $\text{Cu} + \text{O}_2 \longrightarrow 2\text{CuO}$
 (d) $\text{CuO} + \text{N}_2 \longrightarrow \text{Cu} + \text{N}_2\text{O}$

37. The waste product from skin is known as?
 (a) Salts (b) Urine
 (c) Sweat (d) Urea

38. Vitamin helps in blood clotting.
 (a) Vitamin A2 (b) Vitamin B
 (c) Vitamin E4 (d) Vitamin K

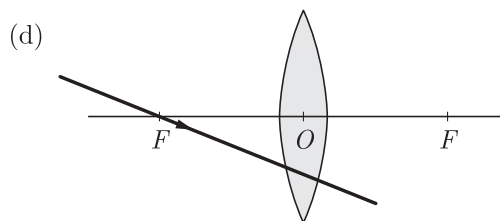
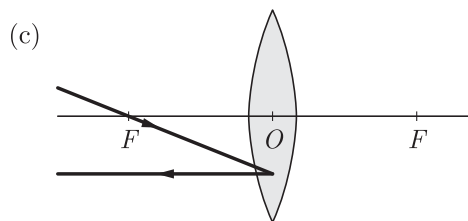
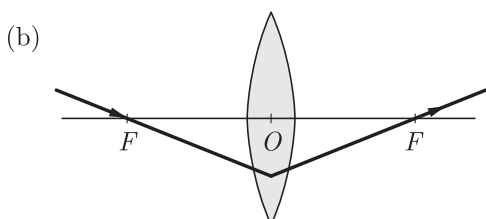
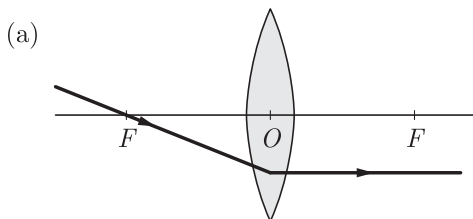
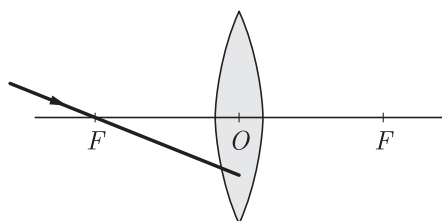
39. The laws of reflection hold good for:
 (a) plane mirror only
 (b) concave mirror only
 (c) convex mirror only
 (d) All mirrors irrespective of their shape.

40. In torches, search light and headlights of vehicles the bulb is placed
 (a) Between the pole and focus of the reflector
 (b) Very near to the focus of the reflector
 (c) Between the focus and centre of curvature of the reflector
 (d) At the centre of curvature of the reflector

41. The effect of root pressure in transport of water is more important at
 (a) day time
 (b) night time
 (c) both (a) and (b)
 (d) none of these

42. Which of the main toxic waste that kidney filters from blood?
 (a) Ammonia (b) Uric acid
 (c) Urea (d) Water

43. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in Figure?



44. 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°

45. The focal length of a convex mirror is 12.5 cm. How far is its centre of curvature from the pole?
 (a) 25 cm
 (b) 30 cm
 (c) 40 cm
 (d) 50 cm

46. A student wants to project the image of a candle flame on a screen 80 cm in front of a mirror by keeping the candle flame at a distance of 20 cm from its pole. The magnification of the image produced is-
 (a) -4
 (b) -2
 (c) -6
 (d) -1

47. Hold a concave mirror with its shining surface towards the sun. Take a sheet of paper and hold it in front of the mirror. Take the sheet of paper away from the mirror gradually till a sharp, bright spot appears on the paper. The sharp, bright spot is due to-
 (a) reflection of light
 (b) refraction of light
 (c) scattering of light
 (d) diffraction of light

48. Which of the following is not a typical property of an ionic compound?
 (a) They are insoluble in water.
 (b) High melting point
 (c) Conduct electricity in the molten and in the aqueous solution state.
 (d) They exist as oppositely charged ions even in the solid state

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)

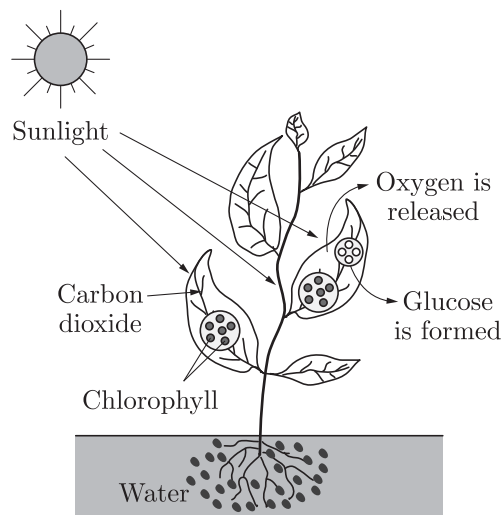
The acids are sour in taste while bases are bitter in taste. Tasting a substance is not a good way of finding out if it is an acid or a base. Acids and bases can be better distinguished with the help of indicators. Indicators are substances that undergo a change of colour with a change of acidic, neutral or basic medium. Many of these indicators are derived from natural substances such as extracts from flower petals and barrier. Some indicators are prepared artificially. For example, methyl orange and phenolphthalein.

49. When a few drops of phenolphthalein is added to a solution having pH 8.5, then the colour
- (a) changes to blue (b) changes to red
(c) changes to pink (d) does not change
50. The colour observed when methyl orange is added to an acid is
- (a) pinkish red (b) blue
(c) orange (d) yellow
51. Which of the following statement(s) is incorrect about the litmus paper?
- (a) It is a most commonly used indicator.
(b) In acidic solution, blue litmus paper turns red.
(c) In neutral solution, no colour change is observed.
(d) Litmus solution is a yellow dye, which is extracted from the lichen plant.
52. Which solution will change blue litmus to red?
- (a) NaOH(aq) (b) NH₄OH(aq)
(c) KCl(aq) (d) H₂SO₄(aq)

Case Based Questions: (53-56)

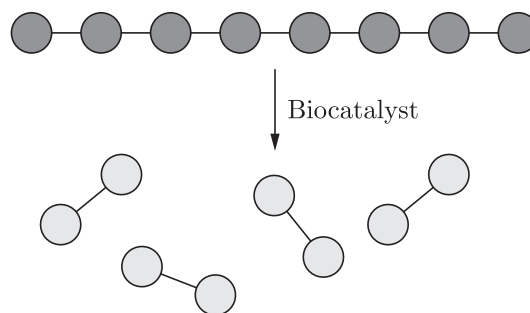
Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis. It is the process by which autotrophs take in substances from the outside and convert them into stored forms of energy. This material is taken in the form of carbon dioxide and water which is converted into carbohydrates in the presence of sunlight and chlorophyll. Carbohydrates are utilised for providing energy to the plant. The carbohydrates which are not used immediately are stored in the form of starch, which serves as the internal energy reserve to be used as and when required by the plant. A somewhat similar situation is seen in us where some of the energy derived from the food we eat is stored in our body in the form of glycogen. That means the complex substances have to be broken down into simpler ones before they can be used for the upkeep and growth of the body. To achieve this, organisms use biocatalysis.

53. Heterotrophs depend for energy on
- (a) autotrophs (b) producers
(c) herbivores (d) both (a) and (b)
54. The picture given below represents how autotrophs take in substances from the outside and convert them into stored forms of energy.



- The correct equation for the given process is
- (a) $6\text{CO}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$
(b) $6\text{O}_2 + 6\text{H}_2\text{O} \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2$
(c) $\text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O} \longrightarrow 6\text{CO}_2 + 6\text{O}_2$
(d) $6\text{CO}_2 + 6\text{O}_2 \longrightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{H}_2\text{O}$

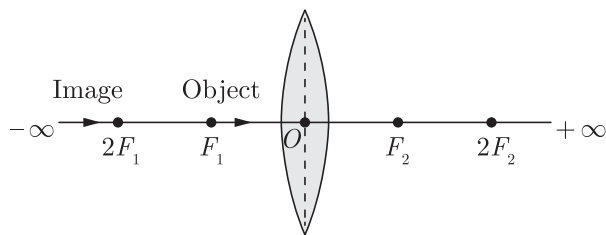
55. Study the picture below that represents the mode of action of a biocatalyst.



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

	Biocatalyst also termed as	Biocatalyst found in human saliva	Biocatalyst produced in human stomach
(a)	Enzymes	Amylase	Pepsin
(b)	Hormones	Amylase	Trypsin
(c)	Enzymes	Trypsin	Pepsin
(d)	Energy	Pepsin	Amylase

56. Which of the following statement (s) is (are) true?
- Carbon and energy requirements of the autotrophic organism are fulfilled by photosynthesis.
 - Carbohydrates are utilised for providing energy to the plant.
 - Chlorophyll is essential for photosynthesis.
 - Autotrophs survival depends directly or indirectly on heterotrophs.
- (a) I and II only (b) II and III only
(c) I, II and III only (d) I, III and IV only



A student did an experiment with a convex lens. He put an object at different distances from the lens. In each case he measured the distance of the image from the lens. The results were recorded in the following table

Object distance (in cm)	25	30	40	60	120
Image distance (in cm)	100	24	60	30	40

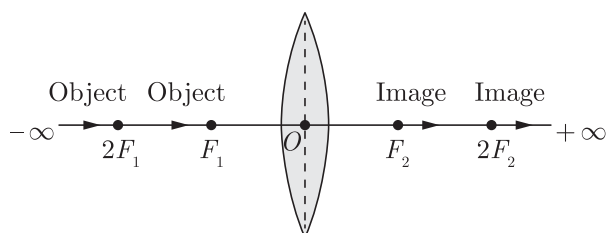
Unfortunately his results are written in the wrong order.

Case Based Questions: (57-60)

The image formed by a convex lens depends on the position of the object in front of the lens. When the object is placed anywhere between focus and infinity, the image formed by convex lens is real and inverted. The image is not obtained on the screen when the object is placed between focus and the lens.

The distance between the optical centre O of the convex lens and the focus point F_1 or F_2 is its focal length.

When the object shifts from $-\infty$ to F_1 , the image moves from F_2 to $+\infty$.



When the object shifts from F_1 to O , the image moves from $-\infty$ to O .

57. A virtual image is formed by convex lens when object is placed
(a) between F and O (b) at infinity
(c) between C and F (d) at F
58. The minimum distance between an object and its real image formed by a convex lens is
(a) zero (b) $2f$
(c) $4f$ (d) $3f$
59. Which of this object distances gives the biggest image?
(a) 60 cm (b) 40 cm
(c) 30 cm (d) 25 cm
60. The image distances in the correct order (in cm) is
(a) 100, 60, 40, 30, 24 (b) 100, 60, 30, 40, 24
(c) 100, 24, 60, 40, 30 (d) 24, 30, 40, 60, 100

SAMPLE PAPER - 24 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(c)	Ch-1	20
2.	(a)	Ch-2	102
3.	(b)	Ch-3	159
4.	(b)	Ch-1	44
5.	(d)	Ch-2	34
6.	(c)	Ch-1	128
7.	(d)	Ch-1	33
8.	(c)	Ch-2	87
9.	(b)	Ch-2	124
10.	(c)	Ch-1	137
11.	(c)	Ch-4	219
12.	(d)	Ch-4	56
13.	(c)	Ch-4	23
14.	(b)	Ch-4	131
15.	(b)	Ch-4	137
16.	(d)	Ch-4	148
17.	(b)	Ch-5	23
18.	(b)	Ch-5	178
19.	(c)	Ch-5	35
20.	(a)	Ch-5	37
21.	(a)	Ch-5	38
22.	(a)	Ch-5	New
23.	(c)	Ch-5	New
24.	(b)	Ch-6	15
25.	(a)	Ch-2	118
26.	(d)	Ch-2	106
27.	(a)	Ch-3	11
28.	(a)	Ch-3	39
29.	(b)	Ch-2	140
30.	(a)	Ch-3	97
31.	(a)	Ch-2	162

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(b)	Ch-1	152
33	(c)	Ch-4	224
34	(c)	Ch-6	62
35	(d)	Ch-2	34
36	(a)	Ch-1	178
37	(c)	Ch-4	111
38	(d)	Ch-4	126
39	(d)	Ch-5	52
40	(b)	Ch-5	51
41	(b)	Ch-4	41
42	(c)	Ch-4	157
43	(a)	Ch-5	56
44	(a)	Ch-5	94
45	(a)	Ch-5	24
46	(a)	Ch-5	37
47	(a)	Ch-5	88
48	(a)	Ch-3	2
49	(c)	Ch-3	203
50	(a)	Ch-3	204
51	(d)	Ch-3	205
52	(d)	Ch-3	206
53	(d)	Ch-4	283
54	(a)	Ch-4	284
55	(a)	Ch-4	285
56	(c)	Ch-4	286
57	(a)	Ch-5	247
58	(c)	Ch-5	248
59	(d)	Ch-5	249
60	(a)	Ch-5	250