

Sample/Pre-Board Paper 28
Class X Term 1 Exam Nov -Dec 2021
Science (086)

Time: 90 Minutes

General Instructions:

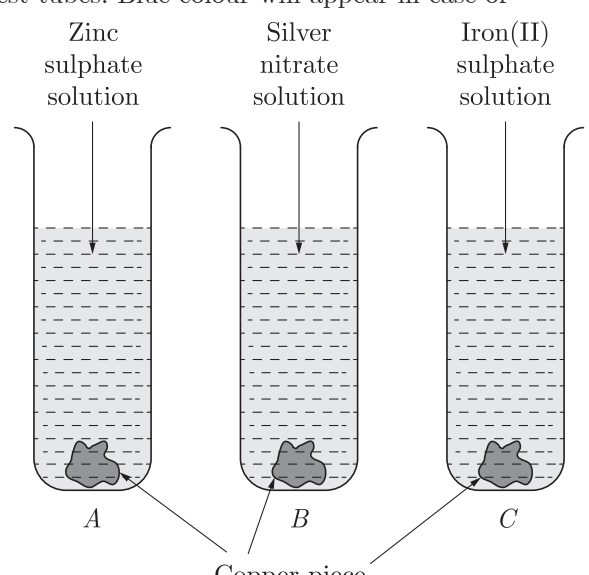
1. The question paper contains three sections.
2. Section A has 24 questions. Attempt any 20 questions.
3. Section B has 24 questions. Attempt any 20 questions.
4. Section C has 12 questions. Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

Section A

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

1. The coating formed on the metals such as iron, silver and copper after corrosion will be:
(a) Black in colour in all the metals
(b) Brown, Black and green in colour
(c) Brown in colour in all the metals
(d) Black, Brown and green in colour
2. When acidified potassium dichromate solution is added to a jar containing sulphur dioxide gas, the solution becomes:
(a) colourless (b) brown
(c) dark orange (d) green
3. Test tubes *A*, *B* and *C* contain zinc sulphate, silver nitrate and iron (II) sulphate solutions respectively as shown in the figure. Copper pieces are added to each test tubes. Blue colour will appear in case of

Zinc sulphate solution



A *B* *C*

Silver nitrate solution

Iron(II) sulphate solution

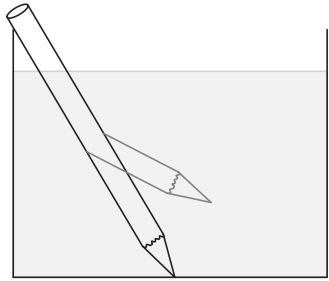
Copper piece

(a) Test tube *A* (b) Test tube *B*
(c) Test tube *C* (d) All the test tube
4. $\text{Na}_2\text{CO}_3 + X\text{HCl} \longrightarrow 2\text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$
In above reaction, the value of *X* is:
(a) 1 (b) 2
(c) 3 (d) 4
5. Which of the following are present in a dilute aqueous solution of hydrochloric acid?
(a) $\text{H}_3\text{O}^+ + \text{Cl}^-$
(b) $\text{H}_3\text{O}^+ + \text{OH}^-$
(c) $\text{Cl}^- + \text{OH}^-$
(d) Unionized HCl
6. $\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow \text{Al}_2\text{O}_3 + 2\text{Fe}$
(a) Combination reaction
(b) Double displacement reaction
(c) Decomposition reaction
(d) Displacement reaction
7. What type of chemical reaction is it?
Calcium + oxygen \longrightarrow Calcium oxide
(a) Combination (b) Displacement
(c) Combustion (d) Oxidation
8. Consider the following table :

Substance	pH
Lemon	2.3
Battery acid	<i>x</i>
Sea water	8.5
Apple	3.1

The value of *x* in above table is:
(a) 0 (b) 1.3
(c) 2.5 (d) 1.9



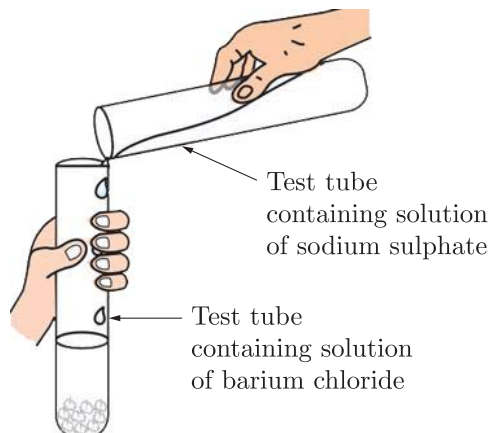
9. Which of the following is the organic acids?
 (a) HCl (b) HNO_3
 (c) H_2SO_4 (d) CH_3COOH
10. What happens when copper rod is dipped in iron sulphate solution?
 (a) Copper displaces iron
 (b) Blue colour of copper sulphate solution is obtained
 (c) No reaction takes place
 (d) Reaction is exothermic
11. Cud chewing animals are known as:
 (a) Ruminants (b) Cannibals
 (c) Frugivore (d) Sanguivores
12. The digestion in stomach is taken care by the which is present in the wall of the stomach.
 (a) Gastric glands
 (b) Digestive juices
 (c) Salivary amylase
 (d) Lipase
13. Heterotrophic organisms include
 (a) Animals and fungi
 (b) Plants
 (c) Bacteria and fungus
 (d) Fungus only
14. Thrombocytes is another name for
 (a) Red corpuscles
 (b) Platelets
 (c) Plasma
 (d) White blood corpuscles
15. The excretory system of human beings includes?
 (a) A pair of kidneys
 (b) A pair of ureters
 (c) A urinary bladder and a urethra
 (d) All of the above
16. Which of the following is true?
 (a) CO_2 is removed from the blood in the lungs
 (b) Nitrogenous waste such as urea or uric acid are removed from blood in the kidneys
 (c) The purpose of making urine is to filter out waste products from the blood
 (d) All of the above
17. When an incident ray makes an angle of 40° with a normal to the air glass interface of the rectangular glass slab. The value of angle of emergence is-
 (a) 30°
 (b) 60°
 (c) 90°
 (d) 40°
18. Which statement best describes the property of light waves illustrated in the diagram below?
- 
- (a) Some materials absorb light waves.
 (b) Some materials refracted by some materials.
 (c) Light waves are refracted by some materials.
 (d) Light waves are emitted by some materials.
19. Two thin lenses of power $+3.5\text{ D}$ and -2.5 D are placed in contact. The power of the lens combination is-
 (a) $+1\text{ D}$ (b) $+1.5\text{ D}$
 (c) $+2.5\text{ D}$ (d) $+2\text{ D}$
20. 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
21. 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
22. Focus is virtual in the case of
 (a) Concave mirror
 (b) Concave mirror
 (c) Plane mirror
 (d) None of the above
23. A spherical mirror whose reflecting surface is curved outwards is called
 (a) concave mirror
 (b) convex mirror
 (c) plane mirror
 (d) biconvex mirror
24. Which phenomenon is responsible for increasing the apparent length of the day by 4 minutes?
 (a) Refraction of light
 (b) Scattering of light
 (c) Dispersion of light
 (d) Atmospheric refraction



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. When 2 mL of sodium hydroxide solution is added to a few pieces of granulated zinc metal taken in test tube. When the contents are warmed, a gas evolves which is bubbled through a soap solution before testing.
The name of the gas is:
(a) Hydrogen (b) Oxygen
(c) Nitrogen (d) Helium
26. Which of the following is not a natural indicator?
(a) Red cabbage (b) China rose
(c) Turmeric (d) Onion
27. 2 ml each of concentrated HCl, HNO_3 and a mixture of concentrated HCl and concentrated HNO_3 in the ratio of 3 : 1 were taken in test tubes labelled as A, B and C. A small piece of metal was put in each test tube. No change occurred in test tubes A and B but the metal got dissolved in test tube C respectively.
The metal could be :
(a) Au (b) Al
(c) Cu (d) Pt
28. The state in which NaCl is bad conductor of electricity is _____ but, the state in which NaCl is good conductor of electricity is _____.
(a) solid, vapour (b) solid, molten
(c) vapour, molten (d) molten, solid
29. Which of the following statement is incorrect about acids?
(a) they change the colour of red litmus to blue
(b) they have sour taste
(c) they may change the colour of indicator
(d) they change the colour of blue litmus to red
30. An element forms an oxide, A_2O_3 which is acidic in nature. Here A is
(a) metal
(b) non-metal
(c) cannot be identified
(d) mixture of metal and non metal
31. **Assertion :** When acid rain flows into the river, it lowers the pH of the river water.
Reason : The survival of aquatic life in such river becomes difficult.
(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 :** During digestion, carbohydrates are broken down to form glucose.
Reason : Glucose is necessary for breathing.
(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 :** Egestion in amoeba takes place through a permanent membrane present in them.
Reason : Cilia is absent in amoeba.
(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 stars twinkle while the planet do not.
Reason : The stars are much lesser in size than the planets.
(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 of the following are present in a dilute aqueous solution of hydrochloric acid?
(a) $\text{H}_3\text{O}^+ + \text{Cl}^-$ (b) $\text{H}_3\text{O}^+ + \text{OH}^-$
(c) $\text{Cl}^- + \text{OH}^-$ (d) Unionized HCl
36. Sodium sulphate and barium chloride mixed together as shown in the figure.



- Which colour substance is formed in the test tube?
(a) White (b) Black
(c) Green (d) Yellow



37. Which one of the following is NOT present in urine?

- (a) Water (b) Salts
(c) Urea (d) Salivary amylase

38. Thrombocytes is another name for

- (a) Red corpuscles
(b) Platelets
(c) Plasma
(d) White blood corpuscles

39. A full length of a distant tall building can definitely be seen by using

- (a) a concave mirror
(b) a convex mirror
(c) a plane mirror
(d) both concave as well as plane mirror

40. 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

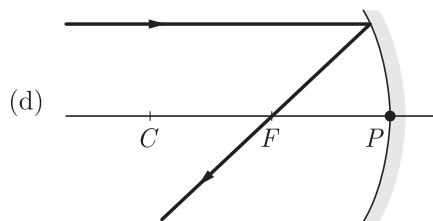
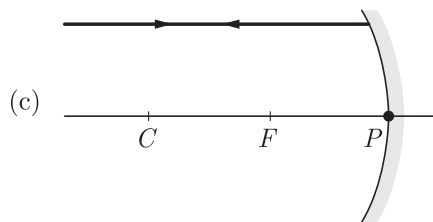
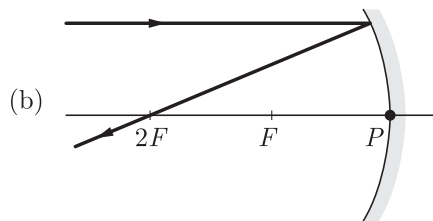
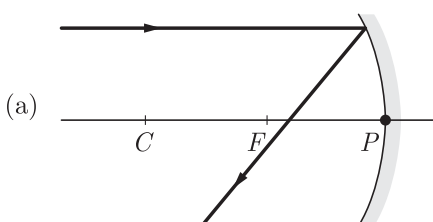
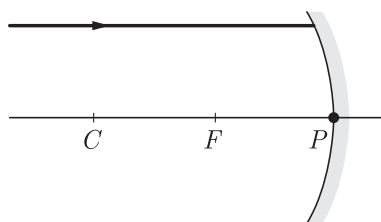
41. The water which is lost through the stomata is replaced by

- (a) water from the xylem vessels in the leaf
(b) water from the phloem vessels in the leaf
(c) water from the veins in the leaf
(d) none of the above

42. Choose the correct pathway of urine in our body-

- (a) Kidney → ureter → urethra → urinary bladder
(b) Kidney → Ureter → urinary bladder → urethra
(c) Kidney → urinary bladder → urethra → Ureter
(d) Kidney → urethra → Ureter → urinary bladder

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



44. 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

45. 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

46. 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

47. A student has to do the experiment on finding the focal length of a given concave mirror by using a distant object. Out of the following set ups 1, 2, 3, 4 available to her.

1. a screen, a mirror holder and a scale.
2. a mirror holder, a screen holder and a scale.
3. a screen holder and a scale.
4. a mirror holder and a screen holder.

The set up that is likely to give her the best result is the set-up labelled as:

- (a) 1 (b) 2
(c) 3 (d) 4

48. The conduction of electricity through a solution involves the movement of _____ particles.

- (a) neutral (b) fixed
(c) charged (d) none of the above



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)

Acidic solutions have excess of hydrogen ions. Even the acidic solutions contain hydroxide ions which come from the ionisation of water but the concentration of hydroxide ions in acidic solutions is much less than that of hydrogen ions.

The basic solution have excess of hydroxide ions. Even the basic solutions have hydrogen ions in them which come from the ionisation of water but the concentration of hydrogen ions in basic solutions is much less than that of hydroxide ions.

In 1909 Sorenson devised a scale (known as pH scale) on which the strength of acid solutions as well as basic solutions could be represented by making use of the hydrogen ion concentrations in them. Sorensen linked the hydrogen ion concentrations of acid and base solutions to the simple numbers 0 to 14 on his pH scale. The pH of a solution is inversely proportional to the concentration of hydrogen ions in it.

In everyday life, pH plays an important role on daily basis like in gardening and farming, the best crops are usually obtained with neutral or slightly acidic soil (pH 6.5 to 7.0), tooth decay starts when the pH of mouth is lower than 5.5. Bee-sting leaves an acid which causes pain and irritation etc.

49. Which of the following substance(s) is added by farmers if the soil is acidic?

- (a) Common salt
- (b) Slaked lime
- (c) Vinegar
- (d) Limestone

50. Rain is called an acid rain when the pH is

- (a) above 8.5
- (b) below 6.5
- (c) below 5.6
- (d) between 7-8

51. During indigestion, which acid is produced by the stomach that causes irritation and pain?

- (a) Hydrochloric acid
- (b) Sulphuric acid
- (c) Nitric acid
- (d) Phosphoric acid

52. The basic salt that gives relief on the stung area is

- (a) washing soda
- (b) caustic soda
- (c) baking soda
- (d) bleaching powder

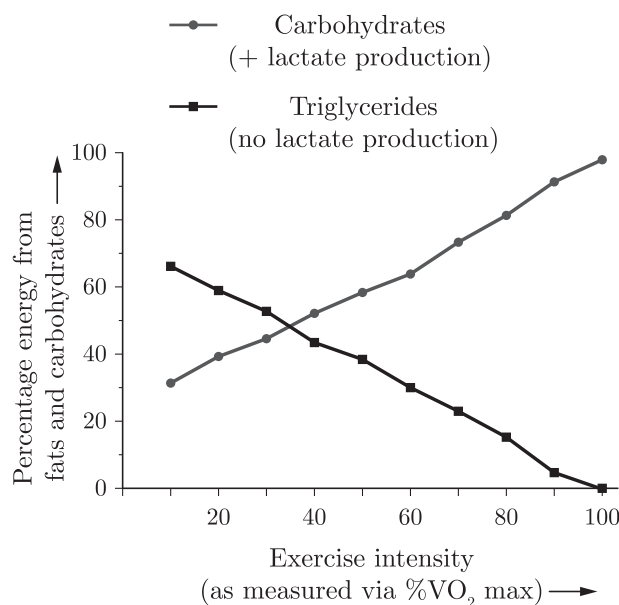
Case Based Questions: (53-56)

The food material taken in during the process of nutrition is used in cells to provide energy for various life processes. Diverse organisms do this in different ways - some use oxygen to break-down the food material completely, some use other pathways that do not involve oxygen. In all cases, the first step is the break-down of food material and it takes place in the cytoplasm. Further, the product of breakdown food may be converted into ethanol and carbon dioxide. Breakdown of food product using oxygen takes place in the mitochondria. Sometime food product is converted into lactic acid which is also a three-carbon molecule.

53. Athletes suffers from muscle cramps due to

- (a) conversion of pyruvate to ethanol
- (b) conversion of pyruvate to glucose
- (c) non-conversion of glucose to pyruvate
- (d) conversion of pyruvate to lactic acid

54. The given graph indicates the effect of exercise intensity on carbohydrate consumption.

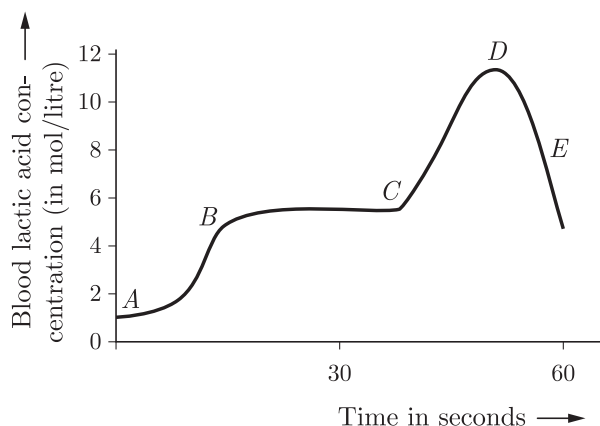


At high intensity of exercise

- (a) the anaerobic consumption of sugars increases
- (b) the aerobic consumption of sugars increases
- (c) the anaerobic consumption of sugars decreases
- (d) no consumption of sugars takes place



55. Study the graph below that represents the blood test reports of an athlete just before and after a race.



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

	Section of race	Concentration of lactic acid	Type of respiration
(a)	A-B (sprint start)	Changing high to low	Changing from anaerobic to aerobic
(b)	B-C (maintaining speed)	High to low	Anaerobic
(c)	C-D (sprint finish)	High	Aerobic
(d)	D-E (just after sprint finishing)	Low	Aerobic

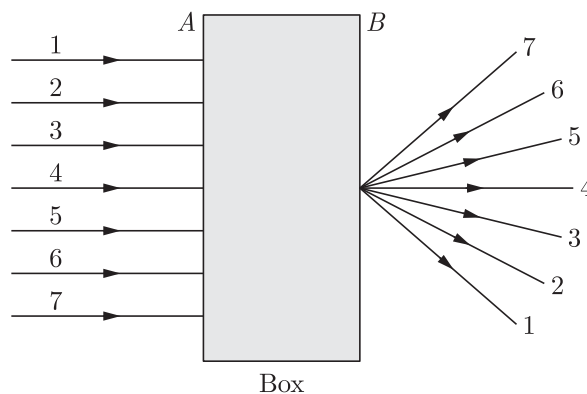
56. Which of the following statement(s) is (are) true about energy released during cellular respiration?

- I. It is used immediately to synthesise ADP.
 - II. It is used to fuel all other activities in the cell.
 - III. ADP is the energy currency for most cellular processes.
 - IV. An ADP molecule is formed from ATP and inorganic phosphate.
- (a) I and II only (b) II only
(c) I, II and III only (d) I, III and IV only

Case Based Questions: (57-60)

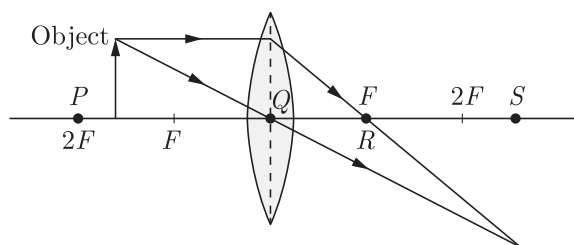
Lenses are objects made of transparent materials such as glass or clear plastic that has curved surfaces. Diverging lenses are thicker at their edges than at their centres and make light rays passing through them spread out. Converging lenses are thicker in middle than at edges and make light rays passing through them focus at a point. These are used in spectacles to help people with poor vision see better. The converging lenses magnify by bending the rays or light that pass through them to meet at a point called focus. Thicker the converging lens is at its centre, the more it magnifies and closer the focus is to the lens.

57. A beam of light is incident on the box through the holes on side *A* and emerges out of the holes on the other face of the box as shown in the figure.



Which of the following could be inside the box?

- (a) Rectangular glass plate
(b) Prism
(c) Convex lens
(d) Concave lens
58. Which relation of powers of lenses are correct?
- (a) P_1 is positive and P_2 is negative
(b) $P_1 > P_2$
(c) $P_1 < P_2$
(d) $P_1 = P_2$
59. The image represents the rays of light travelling through a convex lens.



Where is the image most likely to form?

- (a) Position *S* (b) Position *P*
(c) Position *Q* (d) Position *R*
60. Rakhi conducts an experiment to produce an image of an object on a screen which is placed at 20 cm from the lens. She uses a convex lens of focal length 15 cm for the experiment. Where should she place the object in order to produce the sharpest image?
- (a) 60 cm in front of the lens
(b) 15 cm in front of the lens
(c) 8 cm in front of the lens
(d) 20 cm in front of the lens



SAMPLE PAPER - 23 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(b)	Ch-1	18
2.	(d)	Ch-2	105
3.	(b)	Ch-3	133
4.	(b)	Ch-1	43
5.	(a)	Ch-2	33
6.	(d)	Ch-1	125
7.	(a)	Ch-1	26
8.	(a)	Ch-2	85
9.	(d)	Ch-2	123
10.	(c)	Ch-1	144
11.	(a)	Ch-4	218
12.	(a)	Ch-4	55
13.	(a)	Ch-4	22
14.	(b)	Ch-4	125
15.	(d)	Ch-4	129
16.	(d)	Ch-4	130
17.	(d)	Ch-5	22
18.	(c)	Ch-5	179
19.	(a)	Ch-5	34
20.	(b)	Ch-5	36
21.	(a)	Ch-5	39
22.	(b)	Ch-5	New
23.	(b)	Ch-5	New
24.	(d)	Ch-6	14
25.	(a)	Ch-2	119
26.	(d)	Ch-2	128
27.	(a)	Ch-3	45
28.	(b)	Ch-3	38
29.	(a)	Ch-2	139
30.	(b)	Ch-3	96
31.	(b)	Ch-2	161

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(c)	Ch-1	157
33	(d)	Ch-4	223
34	(b)	Ch-6	61
35	(a)	Ch-2	33
36	(a)	Ch-1	177
37	(d)	Ch-4	110
38	(b)	Ch-4	125
39	(b)	Ch-5	50
40	(c)	Ch-5	49
41	(a)	Ch-4	140
42	(b)	Ch-4	156
43	(d)	Ch-5	55
44	(a)	Ch-5	93
45	(b)	Ch-5	23
46	(a)	Ch-5	38
47	(b)	Ch-5	87
48	(c)	Ch-3	1
49	(b)	Ch-3	198
50	(c)	Ch-3	199
51	(a)	Ch-3	200
52	(c)	Ch-3	201
53	(d)	Ch-4	278
54	(a)	Ch-4	279
55	(d)	Ch-4	280
56	(b)	Ch-4	281
57	(c)	Ch-5	242
58	(c)	Ch-5	243
59	(a)	Ch-5	244
60	(a)	Ch-5	245

