Sample/Pre-Board Paper 10

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

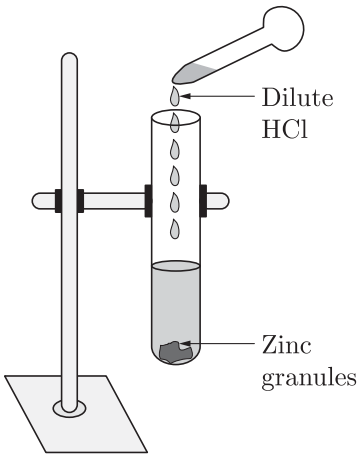
Section – A consists of 24 questions. Attempt any 20 questions from this section.
The first attempted 20 questions would be evaluated.

1. Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by liberation of heat. This process is called slaking of lime. Calcium hydroxide dissolves in water to form its solution called lime water. Which among the following is (are) true about slaking of lime and the solution formed?

1. It is an endothermic reaction.
2. It is an exothermic reaction.
3. The pH of the resulting solution will be more than seven.
4. The pH of the resulting solution will be less than seven.

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

2. A student added dilute HCl to Zn granules taken in a test tube as shown in figure. The correct observation would be:



(a) no change
(b) evolution of gas
(c) Zn granules turned green
(d) formation of a precipitate

3. What happens when calcium is treated with water?

1. It does not react with water.
2. It reach 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 4 (b) 2 and 3
(c) 1 and 2 (d) 3 and 4

4. The _____ is a process in which one or more substances, known as reactants, converted into one or more different substances, known as products.

(a) chemical change (b) physical change
(c) chemical reaction (d) all of the above

5. Which one of the following types of medicines is used for treating indigestion?

(a) Antibiotic (b) Analgesic
(c) Antacid (d) Antiseptic

6. Which of the following statement is correct regarding to physical changes?

(a) In physical change, new substance is formed.
(b) In physical change, no new substance is formed.
(c) In physical change, chemical composition of substance is changed.
(d) None of these

7. Which of the following is a feasible reaction?

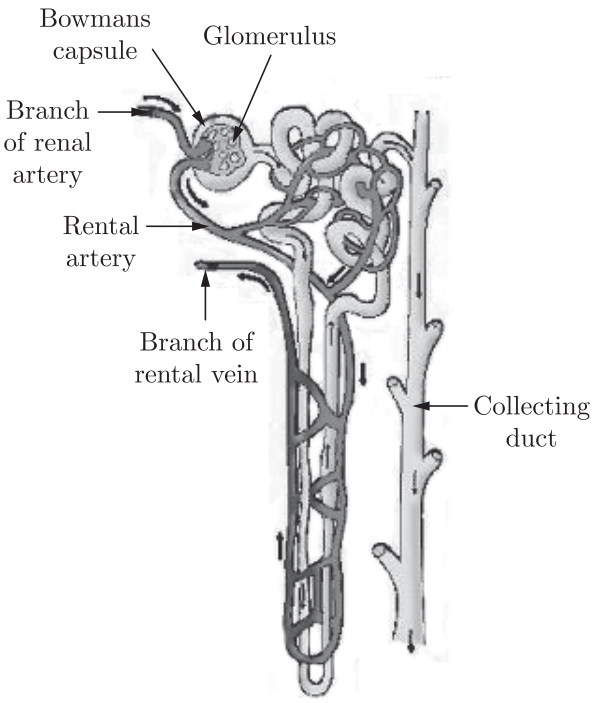
(a) $Ba(s) + K_2SO_4(aq) \longrightarrow BaSO_4(aq) + 2K(s)$
(b) $Zn(s) + 2AgNO_3(aq) \longrightarrow Zn(NO_3)_2(aq) + 2Ag(s)$
(c) $Mg(s) + Na_2SO_4(aq) \longrightarrow MgSO_4(aq) + 2Na(s)$
(d) $Cu(s) + MgSO_4(aq) \longrightarrow CuSO_4(aq) + Mg(s)$

8. $2NaCl + (dil)\,H_2SO_4 \longrightarrow Na_2SO_4 + Y$
Here Y is.
(a) Cl_2 (b) H_2
(c) 2HCl (d) SO_2

9. Which gas is evolved when acids react with metal carbonates?
(a) H_2 (b) CO_2
(c) O_2 (d) NH_3

10. Which reaction is used in photography?
(a) $CaO + H_2O \longrightarrow Ca(OH)_2 + \text{Heat}$
(b) $2FeSO_4 \xrightarrow{\text{Heat}} Fe_2O_3 + SO_2 + SO_3$
(c) $2Cu + O_2 \longrightarrow 2CuO$
(d) $2AgBr \xrightarrow{\text{sunlight}} 2Ag + Br$

11. The given diagram is the structure of a/an-



(a) Alimentary canal (b) Respiratory tract
(c) Nephron (d) Small intestine

12. The exchange of gases in plants can be done through
(a) Surface of plant (b) Roots
(c) Leaves (d) All of the above

13. Various maintenance processes are needed to:
(a) Survival
(b) Prevent damage and break down
(c) Routine process
(d) Release energy

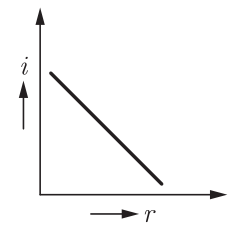
14. Breakdown of pyruvate using oxygen takes place in the
(a) Cytoplasm
(b) Mitochondria
(c) Golgi bodies
(d) Endoplasmic reticulum

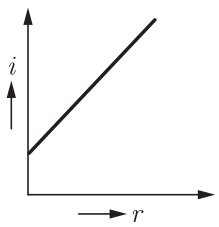
15. What causes cramps in our muscles during sudden activity?
(a) The pyruvate gets converted into lactic acid to release of energy.
(b) The pyruvate gets converted into carbon dioxide to release of energy.
(c) The pyruvate gets converted into ethanol to release of energy.
(d) The pyruvate gets converted into glucose to release of energy.

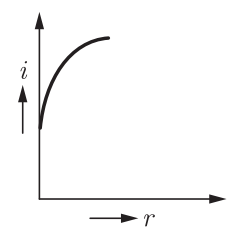
16. During the process of respiration in plants, the direction of diffusion of oxygen and carbon dioxide depends upon
(a) the environmental conditions
(b) the requirements of the plant
(c) both (a) and (b)
(d) none of these

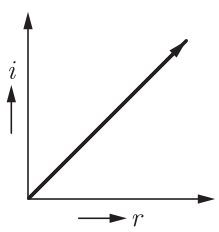
17. The ratio of the refractive index of red light to blue light in air is-
(a) Less than unity
(b) Equal to unity
(c) Greater than unity
(d) Less as well as greater than unity depending upon the experimental arrangement

18. Which of the following correctly represents graphical relation between angle of incidence (i) and angle of reflection (r)?

(a) 

(b) 

(c) 

(d) 

19. The magnification of a concave mirror is -1. it implies that
(a) the object must be at the focus of the concave mirror
(b) the image formed is virtual
(c) the image formed is erect
(d) none of these

20. A full length image 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

21. The magnification of a spherical mirror is ± 2. Then the mirror must be

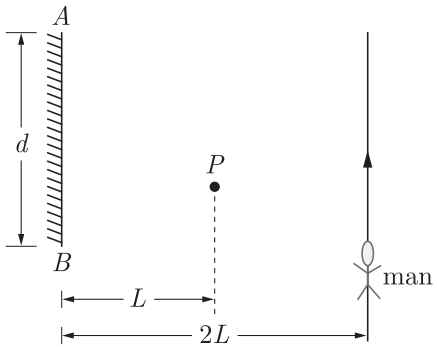
(a) Plane

(b) Concave

(c) Convex

(d) Any one of these

22. 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

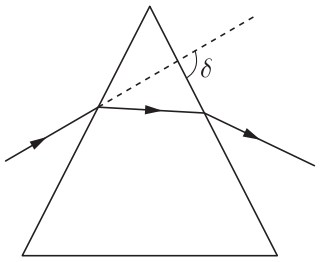
(c) $2d$ (d) $3d$

23. A 6 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 15 cm. The distance of the object from the lens is 10 cm. The position, of the image is-

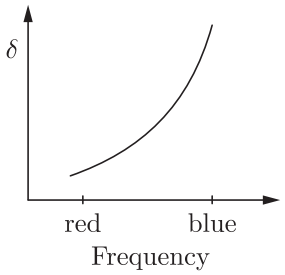
(a) 20 cm (b) 30 cm

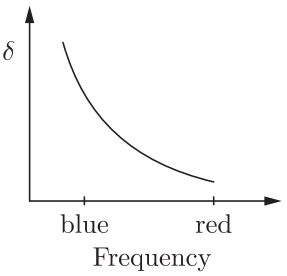
(c) -30 cm (d) 50 cm

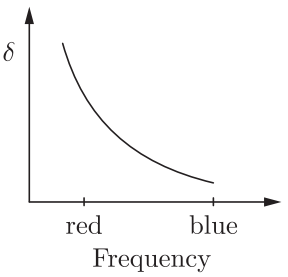
24. Light rays are deviated by a prism as shown in the figure.

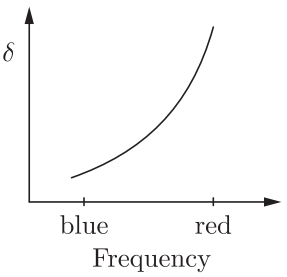


The deviation angle δ is measured for light rays of different frequency, including blue light and red light. Which of the following graph is correct?

(a)


(b)


(c)


(d)


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 is not true for acids?
(a) Acid react with copper (II) oxide to produce a blue solution.
(b) Acid liberate carbon dioxide gas when reacted with sodium carbon-ale
(c) Acid liberate hydrogen gas when reacted with magnesium ribbon.
(d) Acid produces hydrogen molecules when dissolved in water.

26. The pH of soft drink is ..... and they are ..... .
(a) less than 7, acidic (b) more than 7, basic
(c) equal to 7, neutral (d) less than 7, basic

27. A metal M of moderate reactivity is present as its sulphide X. On heating in air, X converts into is oxide Y and a gas evolves. On heating Y and X together, the metal M is produced. X and Y respectively are
(a) X cuprous sulphide, Y cuprous oxide
(b) X cuprous sulphide, Y cupric oxide
(c) X sodium sulphide, Y sodium oxide
(d) X calcium sulphide, Y calcium oxide

28. Non-metals are never used in cooking utensils because:
(a) They are good conductors of heat
(b) They can't cook food properly
(c) They are not attractive
(d) They are bad conductors of heat

29. Which of the following is/are correct for diluting acid?
1. Adding acid to water by stirring.
2. Adding water to acid by stirring.
(a) Only 1 (b) Only 2
(c) Both 1 and 2 (d) Neither 1 nor 2

30. Which among the following alloys contain mercury as one of its constituents?
(a) Stainless steel (b) Alnico
(c) Solder (d) Zinc amalgam

31. **Assertion :** Sodium hydroxide reacts with zinc to produce hydrogen gas.
Reason : Acids reacts with active metals to produce hydrogen gas.
(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 :** Chemical equations can be made more informative.
Reason : We can write physical state of reactants and products, temperature and pressure, name of catalyst used etc.
(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 :** Carbon monoxide is injurious to the health of the individual.
Reason : Carbon monoxide has very strong affinity for the blood.
(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 :** On moving from optically rarer to denser medium, a ray of light bends away from the normal.
Reason : Speed of light is more in denser medium and less in rarer medium.
(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. 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

36. Which of the following are exothermic processes?
1. Reaction of water with quick lime.
2. Dilution of an acid.
3. Evaporation of water.
4. Sublimation of camphor (crystals).
(a) 1 and 2
(b) 2 and 3
(c) 1 and 4
(d) 3 and 4

37. Sweating is meant for:
(a) Regulation of body temperature
(b) Removal of excess salt
(c) Removal of excess water
(d) All of the above

38. 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

39. Which one of the following materials cannot be used to make a lens?
(a) Water (b) Glass
(c) Plastic (d) Clay

40. 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

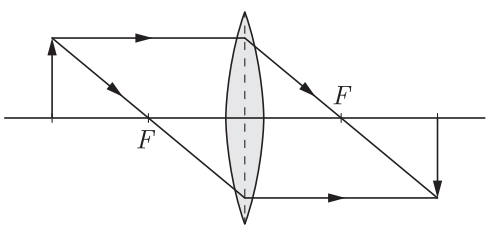
41. Largest heart is found in____
(a) Elephant (b) Giraffe
(c) Crocodile (d) Lion

42. The function of valves present in auricles and ventricles is-
(a) It ensures that the blood flows only in one direction.
(b) Helps in coagulation of blood
(c) Destroy the worn out blood cells
(d) Measure pressure of body fluids

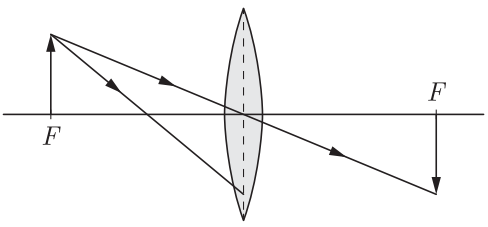
43. A combination of a concave and convex lens has power 5 D. If the power of convex lens is 4 D, then focal length of the concave lens is
(a) 10 cm (b) 20 cm
(c) 100 cm (d) 200 cm

44. Which of the following ray diagram is correct?

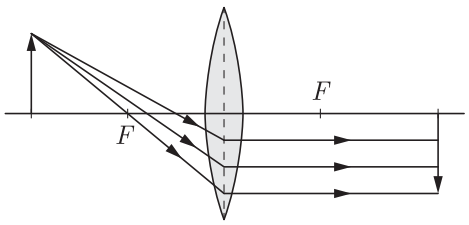
(a)



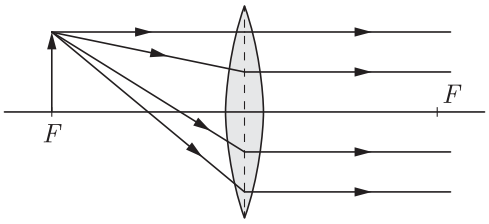
(b)



(c)

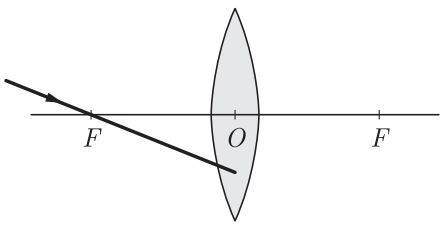


(d)

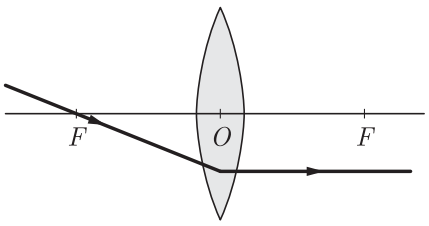


45. A concave mirror produces three times magnified (enlarged) real image of an object placed at 10 cm in front of it. Where is the image located?
(a) 30 cm (b) 40 cm
(c) -30 cm (d) -40 cm

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



(a)



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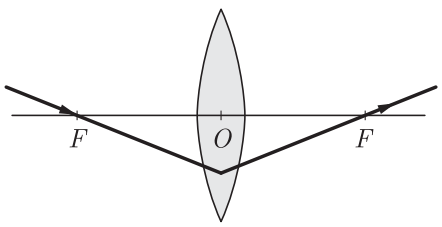
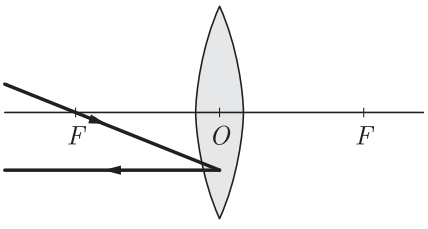
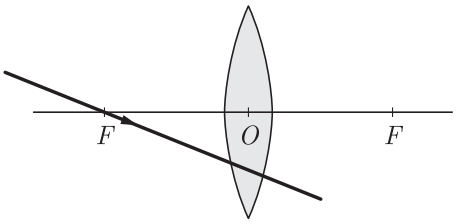


(c)



(d)



47. The image formed by a concave mirror is real, inverted and of the same size as that of the object. the position of the object should be :

(a) Beyond C (b) Between C and F

(c) At C (d) At F

48. Which one of the following metals do not react with cold as well as hot water?

(a) Na (b) Ca

(c) Mg (d) Fe

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 metal M reacts vigorously with water to form a solution S and a gag G. The solution S turns red litmus to blue whereas gas G, which is lighter than air, burns with a pop sound. Metal M has a low melting point and is used as a coolant in nuclear reactors.

49. The metal M is:

(a) Sodium (b) Copper

(c) Iron (d) Steel

50. The solution S is:

(a) NaCl (b) NaOH

(c) $CaCl_2$ (d) CaOH

51. Here the gas G is:

(a) Hydrogen (b) Oxygen

(c) Carbon-dioxide (d) Nitrogen

52. Which of the following balanced reaction take place here?

(a) $Na + H_2O \longrightarrow Na_2O + H_2$

(b) $2Na + 2H_2O \longrightarrow 2NaOH + H_2$

(c) $2Na + 2H_2O \longrightarrow Na_2O_2 + O_2$

(d) $Na + H_2O \longrightarrow Na_2O_2 + H_2$

Case Based Questions: (53-60)

The small intestine is the site of the complete digestion of carbohydrates, proteins and fats. It receives the secretions of the liver and pancreas for this purpose. The food coming from the stomach is acidic and has to be made alkaline for the pancreatic enzymes to act. Bile juice from the liver accomplishes this in addition to acting on fats. Fats are present in the intestine in the form of large globules which makes it difficult for enzymes to act on them. Bile salts break them down into smaller globules increasing the efficiency of enzyme action. The pancreas secretes pancreatic juice which contains enzymes like trypsin for digesting proteins and lipase for breaking down emulsified fats. The walls of the small intestine contain glands which secrete intestinal juice. The enzymes present in it finally convert the proteins to amino acids, complex carbohydrates into glucose and fats into fatty acids and glycerol.

53. The food coming from the stomach is made alkaline by:

(a) Bile juice (b) Pancreatic juice

(c) Gastric juice (d) Intestinal juice

54. In small intestine proteins are decomposed into:

(a) fatty acids only

(b) glucose

(c) amino acids

(d) fatty acids and glycerol

55. Which enzymes are present in the pancreatic juice for digestion of proteins and fats?

(a) Amylase and pepsin (b) Amylase and lipase

(c) Pepsin and trypsin (d) Lipase and trypsin

56. Which two organs release their secretions into small intestine for digestion of food?

(a) Liver and stomach

(b) Oesophagus and stomach

(c) Pancreas and stomach

(d) Liver and pancreas

Case Based Questions: (57-60)

If the position of object in front of the mirror is changed, the size of image changes. If the lengths of the object and image are measured perpendicular to the principle axis, the ratio of length of the image to the length of the object is called linear magnification it is represent by 'm'.
The magnification m is also related to the object distance and image distance. It can be expressed as:

Magnification, $$m = \frac{h'}{h} = -\frac{v}{u}$$

The height of the object is taken to be positive as the object is usually placed above the principal axis. The height of the image should be taken as positive for virtual images. However, it is to be taken as negative for real images. A negative sign in the value of the

magnification indicates that the image is real. A positive sign in the value of the magnification indicates that the image is virtual.

57. The magnification produced by a spherical mirror of an object of 5 cm is 2. The size of the image formed by this spherical mirror will be:

(a) 20 cm (b) 0.4 cm

(c) 2.5 cm (d) 10 cm

58. A concave mirror forms a virtual image of an object placed at a distance 20 cm. If the size of the image is twice of the size of the object then the image will be formed at a distance:

(a) 40 cm (b) 10 cm

(c) 20 cm (d) 30 cm

59. The magnification produced by a spherical mirror is –2. What type of mirror is it?

(a) Either a convex or a concave mirror

(b) A plane mirror

(c) A convex mirror

(d) A concave mirror

60. An object of size 5 cm is placed at a distance of 20 cm in front of a concave mirror focal length 10 cm. The distance of the image from the mirror and its height will be:

(a) $v = -20\ \text{cm}, h_i = +5\ \text{cm}$

(b) $v = +30\ \text{cm}, h_i = +5\ \text{cm}$

(c) $v = +20\ \text{cm}, h_i = +10\ \text{cm}$

(d) $v = -20\ \text{cm}, h_i = -5\ \text{cm}$

SAMPLE PAPER - 5 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1	(b)	Ch-1	67
2	(b)	Ch-2	180
3	(d)	Ch-3	57
4	(c)	Ch-1	10
5	(c)	Ch-2	4
6	(b)	Ch-1	36
7	(b)	Ch-1	84
8	(c)	Ch-2	89
9	(b)	Ch-2	68
10	(d)	Ch-1	111
11	(c)	Ch-4	155
12	(d)	Ch-4	36
13	(b)	Ch-4	4
14	(b)	Ch-4	71
15	(a)	Ch-4	72
16	(c)	Ch-4	74
17	(a)	Ch-5	74
18	(d)	Ch-5	63
19	(d)	Ch-5	95
20	(b)	Ch-5	96
21	(b)	Ch-5	97
22	(d)	Ch-5	161
23	(c)	Ch-5	43
24	(a)	Ch-6	39
25	(d)	Ch-2	62
26	(a)	Ch-2	104
27	(a)	Ch-3	110
28	(d)	Ch-3	8
29	(a)	Ch-2	38
30	(d)	Ch-3	75
31	(b)	Ch-2	173

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(a)	Ch-1	153
33	(b)	Ch-4	226
34	(a)	Ch-6	186
35	(d)	Ch-2	11
36	(a)	Ch-1	63
37	(d)	Ch-4	161
38	(d)	Ch-4	186
39	(d)	Ch-5	9
40	(a)	Ch-5	24
41	(b)	Ch-4	201
42	(a)	Ch-4	85
43	(c)	Ch-5	166
44	(a)	Ch-5	137
45	(c)	Ch-5	5
46	(a)	Ch-5	56
47	(c)	Ch-5	99
48	(d)	Ch-3	23
49	(a)	Ch-3	198
50	(b)	Ch-3	199
51	(a)	Ch-3	200
52	(b)	Ch-3	201
53	(a)	Ch-4	263
54	(c)	Ch-4	264
55	(d)	Ch-4	265
56	(d)	Ch-4	266
57	(d)	Ch-5	227
58	(a)	Ch-5	228
59	(d)	Ch-5	229
60	(d)	Ch-5	230