Sample/Pre-Board Paper 33

Class X Term 1 Exam Nov -Dec 2021

Science (086)

Time: 90 Minutes

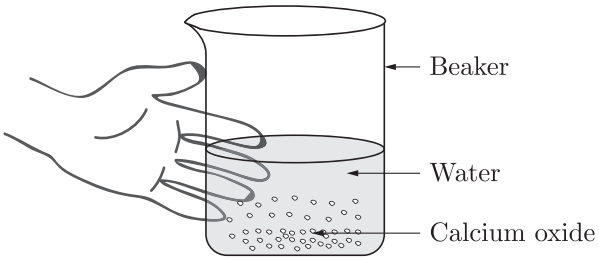
General Instructions:

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. Calcium oxide reacts vigorously with water.



Identify the incorrect statements.

1. It is an endothermic reaction.
2. Slaked lime is produced.
3. Quick lime is produced.
4. It is an exothermic reaction.
5. It is a combination reaction.

(a) 1 and 2 (b) 3 and 4
(c) 1 and 3 (d) 2, 4 and 5

2. Which two substances react to give salt and water only?

(a) Copper (II) oxide and ethanoic acid
(b) Magnesium and sulphuric acid
(c) Sodium oxide and water
(d) Zinc carbonate and hydrochloric acid

3. The electronic configurations of three elements X, Y and Z are X- 2, 8; Y- 2, 8, 7 and Z- 2, 8, 2. which of the following is correct?

(a) X is a metal.
(b) Y is a metal.
(c) Z is a non-metal.
(d) Y is a non-metal and Z is a metal.

4. $Y + 2HCl \longrightarrow ZnCl_2 + H_2$. In the above reaction, Y is:

(a) Aluminium (b) Copper
(c) Sodium (d) Zinc

5. 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

6. Which one of the following involve a chemical reaction?

(a) Heating magnesium wire in the presence of air at high temperature
(b) Evaporation of water
(c) Storing on nitrogen gas under pressure
(d) Keeping petrol in a China dish in open

7. Which of the following gases can be used for storage of fresh sample of an oil for a long time?

(a) Carbon dioxide or oxygen
(b) Nitrogen or oxygen
(c) Carbon dioxide or helium
(d) Helium or nitrogen

8. What happens when a solution of an acid is mixed with a solution of a base in a test tube?

1. Salt formation takes place.
2. The temperature of the solution remains the same.
3. The temperature of the solution decreases.
4. The temperature of the solution increases.

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

9. Which of the following is the strong acid?

(a) CH_3COOH
(b) HCN
(c) HBr
(d) HF

10. $CuO + H_2 \rightarrow H_2O + Cu$, reaction is an example of:
(a) redox reaction
(b) synthesis reaction
(c) neutralisation
(d) analysis reaction

11. The component of blood responsible for transporting O_2 is?
(a) RBC (b) WBC
(c) platelets (d) all of these

12. The ..... delivers the digestive juice to the small intestine through small tubes called ducts.
(a) Stomach
(b) Pancreas
(c) Large intestine
(d) Anus

13. ..... are utilised for providing energy to the plants.
(a) Carbohydrates
(b) Enzymes
(c) Protein
(d) Carbon dioxide

14. 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

15. Transpiration helps :
(a) in the absorption
(b) in the upward movement of water minerals dissolved in it from roots to the leaves
(c) in temperature regulation
(d) All of the above

16. The excretory system of human beings includes a pair of kidneys, a pair of ureters, a urinary bladder and a urethra
(a) a pair of kidneys, a pair of ureters
(b) a urinary bladder and a urethra
(c) a pair of kidneys, a urinary bladder and a urethra
(d) a pair of kidneys, a pair of ureters, a urinary bladder and a urethra

17. For a real object, which of the following can produce a real image
(a) Plane mirror
(b) Concave lens
(c) Convex mirror
(d) Concave mirror

18. Velocity of light in air is $3 \times 10^8\,\mathrm{m/s}$. While its velocity in a medium is $1.5 \times 10^8\,\mathrm{m/s}$. Then, refractive index of this medium is
(a) 3
(b) 5
(c) 0.5
(d) 2

19. 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.

20. You are given water, mustard oil, glycerine and kerosene. In which of these media, a ray of light incident obliquely at same angle would bend the most?
(a) Kerosene
(b) Water
(c) Mustard oil
(d) Glycerine

21. A child standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.
(a) Plane, convex and concave
(b) Convex, concave and plane
(c) Concave, plane and convex
(d) Convex, plane and concave

22. Mark the correct statement :
(a) Centre of reflecting surface of a spherical mirror is called the centre of curvature
(b) Pole lies outside the mirror
(c) pole is represented by Po
(d) None

23. If a spherical mirror is immersed in a liquid, its focal length will:
(a) Increase
(b) Decrease
(c) Remain unchanged
(d) Depend on the nature of liquid

24. A ray of light falls on one face of an equilateral glass prism at 40° and emerges from the other face at the same angle. The deviation suffered by the ray is
(a) 20°
(b) 40°
(c) 60°
(d) 80°

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 the following is used in manufacturing of ammonia?
(a) Washing soda
(b) Bleaching powder
(c) Plaster of paris
(d) Hydrogen gas

26. When $Ca(OH)_2$ reacts with $CO_2(g)$, it will give $CaCO_3(s)$ and $H_2O(l)$. The nature of $CaCO_3$ is
(a) acidic
(b) basic
(c) neutral
(d) All are possible

27. When dilute hydrochloric acid is added to granulated zinc placed in a test tube, the observation made is _____
(a) the reaction mixture turns milky
(b) odour of chlorine is observed
(c) a colourless and odourless gas evolves with bubbles
(d) the surface of the metal turns hining

28. Which metal is stored in kerosene oil?
(a) sodium (b) mercury
(c) tungsten (d) zinc

29. The organic acid present in tomato is
(a) oxalic acid
(b) lactic acid
(c) malic acid
(d) tartaric acid

30. The compound containing both ionic and covalent bonds is
(a) $AlBr_3$
(b) CaO
(c) $MgCl_2$
(d) NH_4Cl

31. **Assertion :** If the pH inside the mouth decreases below 5.5, the decay of tooth enamel begins.
Reason : The bacteria present in mouth degrades the sugar and left over food particles and produce acids that remains in the mouth after eating.
(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 :** Precipitation reactions produce insoluble salts.
Reason : Precipitation reaction is a double decomposition reaction.
(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 :** The thickest muscles are present in left atrium.
Reason : Left atrium receives deoxygenated blood from the lungs.
(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 :** Secondary rainbow is fainter than primary rainbow.
Reason : Secondary rainbow formation is three step process and hence, the intensity of light is reduced at the second reflection inside the rain drop.
(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 is used for dissolution of gold?
(a) Hydrochloric acid (b) Sulphuric acid
(c) Nitric acid (d) Aqua regia

36. The following reaction is an example of a
$4NH_3(g) + 5O_2(g) \longrightarrow 4NO(g) + 4H_2O(g)$
1. displacement reaction
2. combination reaction
3. redox reaction
4. neutralisation reaction
(a) 1 and 4 (b) 2 and 3
(c) 1 and 3 (d) 3 and 4

37. What is normal blood pressure in humans?
(a) 120/80 mm of Hg
(b) 130/60 mm of Hg
(c) 140/70 mm of Hg
(d) 140/ 90 mm of Hg

38. 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

39. Air is not visible because it
(a) is nearly a perfectly transparent
(b) neither absorbs nor reflects light
(c) transmits whole of light
(d) all of the above are correct

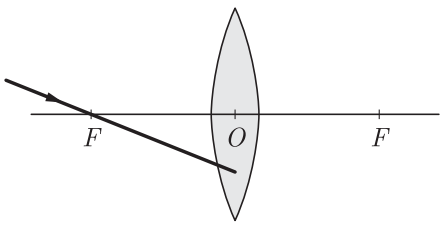
40. According to laws of reflection of light
(a) Angle of incidence is equal to the angle of reflection
(b) Angle of incidence is less than the angle of reflection
(c) Angle of incidence is greater than the angle of reflection
(d) None of these

41. The trans location of food and other substances takes place in the sieve tubes with the help of adjacent companion cells in :
(a) upward directions
(b) downward directions
(c) both upward and downward directions
(d) none of these

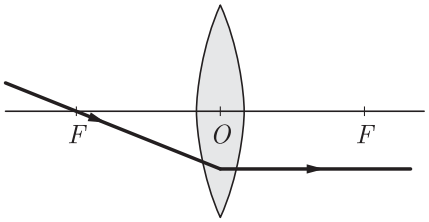
42. Sweating is meant for:
(a) Regulation of body temperature
(b) Removal of excess salt
(c) Removal of excess water
(d) All of the above

43. You are given water, mustard oil, glycerine and kerosene. In which of these media, a ray of light incident obliquely at same angle would bend the most?
(a) Kerosene
(b) Water
(c) Mustard oil
(d) Glycerine

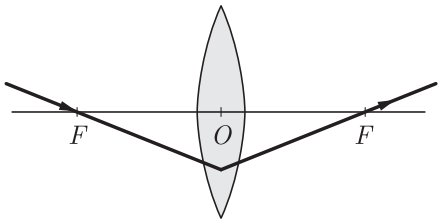
44. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in Figure?



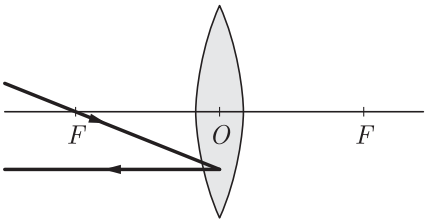
(a)



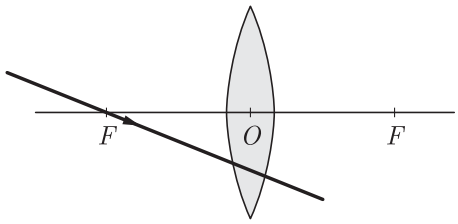
(b)



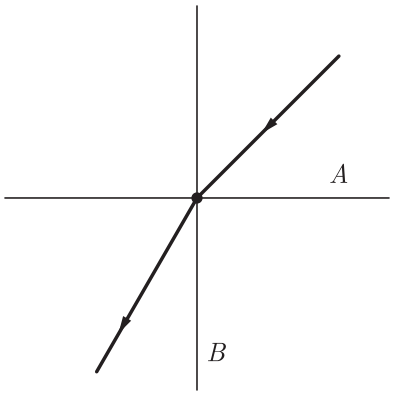
(c)



(d)



45. A ray of light is refracted as per the following diagram. Which of the following medium is optically denser?
(a) Medium A
(b) Medium B
(c) Cannot be identify
(d) Both medium are denser

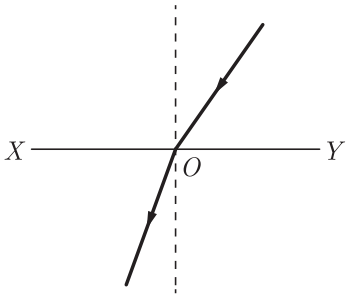


46. When light enters from air to glass, the angles of incidence and refraction in air and glass are 45° and 30° respectively. The refractive index of glass is (Given that $\sin 45^\circ = \frac{1}{\sqrt{2}}$, $\sin 30^\circ = \frac{1}{2}$)

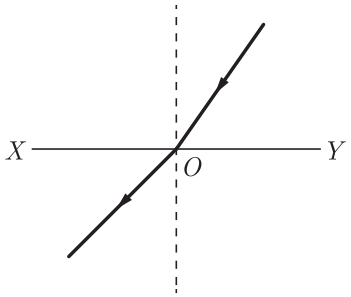
(a) 1.90 (b) 1.41
(c) 1.20 (d) 1.55

47. Which of the following figures shows refraction of light while going from denser to rarer medium?

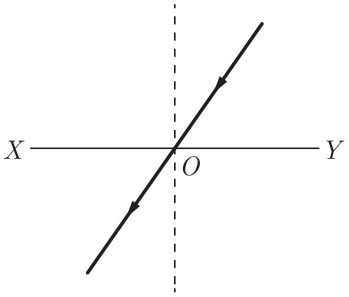
(a)



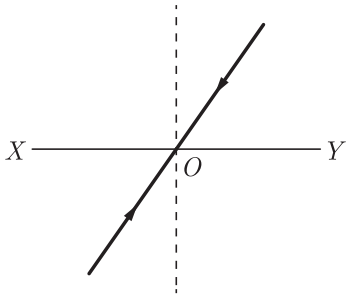
(b)



(c)



(d)



48. Silver articles become black on prolonged exposure to air. This is due to the formation of

(a) Ag_3N (b) Ag_2O

(c) Ag_2S (d) Ag_2S and Ag_3N

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)

In pure water, the concentrations of hydrogen ions and hydroxide ions are equal. Due to this, pure water is neither acidic nor basic, it is neutral.

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

The basic solution have excess of hydroxide ions. Even the basic solutions have hydrogen ions in them which come form 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.

pH may be defined as a number by which negative power of 10 has to be raised in order to express the concentration of hydrogen ion of the solution i.e., $[H^+] = 10^{-pH}$ where the concentration of H^+ ions is expressed as moles/litre and is written as $[H^+]$.

S. No.	Solution	pH limit
1.	Saliva	6.5-7.5
2.	Lemon juice	2.2-2.4
3.	Tomato juice	4.0-4.4
4.	Coffee	4.5-5.5

49. When drops of tomato juice are dropped on litmus paper than litmus paper will turn

(a) red (b) yellow

(c) green (d) black

50. The nature of saliva in given table is

(a) acidic

(b) basic

(c) Neither acidic nor basic

(d) cannot be define

51. The effect of acid on litmus paper is

(a) blue to red in colour

(b) red to blue in colour

(c) red to green in colour

(d) green to red on colour

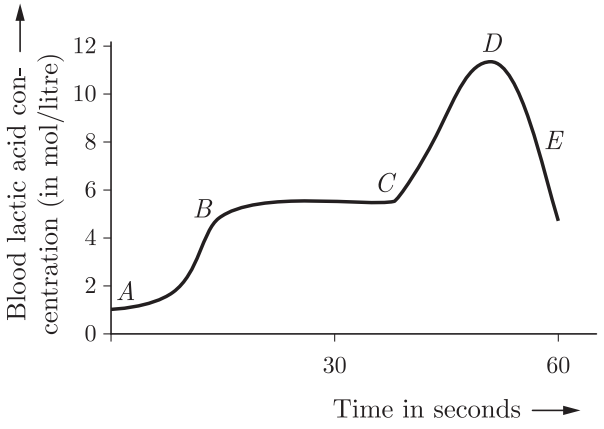
52. The effect of base on litmus paper is
(a) Turns red litmus to blue in colour
(b) Turns blue litmus to blue in colour
(c) Turns red litmus to orange
(d) None of these

Case Based Questions: (53-56)

All living cells require energy for various activities. This energy is available by the breakdown of simple carbohydrates either using oxygen or without using oxygen.

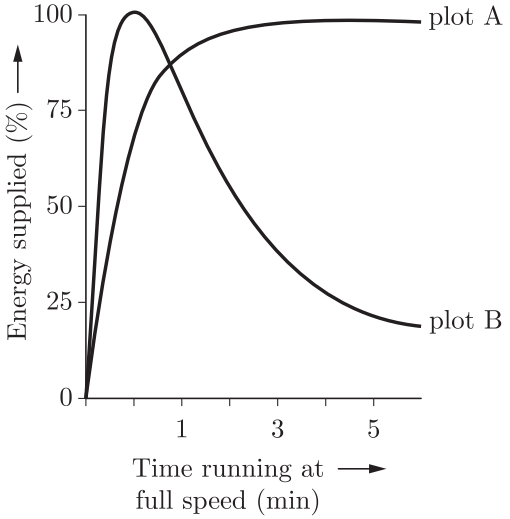
53. Energy in the case of higher plants and animals is obtained by:
(a) Breathing (b) Tissue respiration
(c) Organ respiration (d) Digestion of food

54. The graph below represents the blood lactic acid concentration of an athlete a race of 400 m and shows a peak at point *D*. The blood of an athlete was tested before, during and after a 400 m race:
Lactic acid production has occurred in the athlete while running in the 400 m race. Which of the following processes explains this event?



(a) Aerobic respiration
(b) Anaerobic respiration
(c) Fermentation
(d) Breathing

55. Study the graph that represents the amount of energy supplied with respect to the time while an athlete is running at full speed.



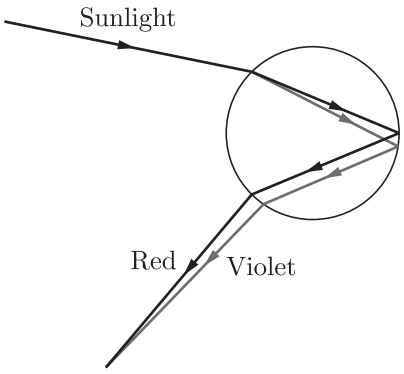
Choose the correct combination of plots and justification provided in the following table:

	Plot A	Plot B	Justification
(a)	Aerobic	Anaerobic	Amount of energy is low and inconsistent in aerobic and high in anaerobic
(b)	Aerobic	Anaerobic	Amount of energy is high and consistent in aerobic and low in anaerobic
(c)	Anaerobic	Aerobic	Amount of energy is high and consistent in aerobic and low in anaerobic
(d)	Anaerobic	Aerobic	Amount of energy is high and inconsistent in anaerobic and low in anaerobic

56. The characteristic processes observed in anaerobic respiration are:
(i) Presence of oxygen
(ii) Release of carbon dioxide
(iii) Release of energy
(iv) Release of lactic acid
(a) (i), (ii) only (b) (i), (ii), (iii) only
(c) (ii), (iii), (iv) only (d) (iv) only

Case Based Questions: (57-60)

A beautiful atmospheric phenomenon commonly seen after rain is the rainbow. The colourful arc of a rainbow across the sky is the result of several optical effects: refraction, internal reflection and dispersion. But the conditions must be just right. As we all know, a rainbow is seen after a rain but not after every rain. Following a rain, there are many tiny water droplets in the air. Sunlight incident on the droplets in air produces a rainbow. But whether a rainbow is seen depends on the relative positions of the Sun and the observer. As you may have noticed, the Sun is generally behind you when you see a rainbow.
To understand the formation and observation of a rainbow, consider what happens when sunlight is incident on a water droplet. On entering the droplet, the light is first refracted and then dispersed into component colours as it travels in the water.
These seven colours strike the inner surface of the water drop and get internally reflected. The reflected light is refracted again as it comes out of the drop as shown in figure.



57. Which of the following phenomena of light are involved in the formation of a rainbow?

(a) Reflection, refraction and dispersion

(b) Refraction, dispersion and total internal reflection

(c) Refraction, dispersion and internal reflection

(d) Dispersion, scattering and total internal reflection

58. Which phenomenon does not occur during rainbow formation?

(a) Refraction (b) Induction

(c) Dispersion (d) Reflection

59. The order of wavelength of red, yellow and orange is

(a) yellow $<$ orange $<$ red

(b) yellow $>$ orange $>$ red

(c) orange $>$ red $>$ yellow

(d) none of these

60. The order of frequency of the seven colours of rainbow is

(a) $\mathrm{V = I = B = G = Y = O = R}$

(b) $\mathrm{V > I > B > G > Y > O > R}$

(c) $\mathrm{I < B < Y < G < O < R < V}$

(d) none of the above

SAMPLE PAPER - 28 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(c)	Ch-1	53
2.	(a)	Ch-2	66
3.	(d)	Ch-3	77
4.	(d)	Ch-1	48
5.	(d)	Ch-2	46
6.	(a)	Ch-1	145
7.	(d)	Ch-1	72
8.	(d)	Ch-2	5
9.	(c)	Ch-2	129
10.	(a)	Ch-1	141
11.	(a)	Ch-4	209
12	(b)	Ch-4	60
13	(a)	Ch-4	27
14	(a)	Ch-4	140
15	(d)	Ch-4	142
16	(d)	Ch-4	152
17	(d)	Ch-5	65
18	(d)	Ch-5	172
19	(d)	Ch-5	52
20	(d)	Ch-5	53
21	(c)	Ch-5	57
22	(d)	Ch-5	New
23	(c)	Ch-5	New
24	(a)	Ch-6	20
25	(d)	Ch-2	109
26	(b)	Ch-2	140
27	(c)	Ch-3	52
28	(a)	Ch-3	44
29	(a)	Ch-2	144
30	(d)	Ch-3	108
31	(a)	Ch-2	166

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32	(b)	Ch-1	156
33	(d)	Ch-4	228
34	(a)	Ch-6	66
35	(d)	Ch-2	24
36	(c)	Ch-1	61
37	(a)	Ch-4	115
38	(d)	Ch-4	130
39	(d)	Ch-5	60
40	(a)	Ch-5	61
41	(c)	Ch-4	145
42	(d)	Ch-4	161
43	(d)	Ch-5	53
44	(a)	Ch-5	56
45	(b)	Ch-5	28
46	(b)	Ch-5	33
47	(b)	Ch-5	92
48	(c)	Ch-3	6
49	(a)	Ch-3	223
50	(c)	Ch-3	224
51	(a)	Ch-3	225
52	(a)	Ch-3	226
53	(b)	Ch-4	New
54	(b)	Ch-4	New
55	(b)	Ch-4	New
56	(c)	Ch-4	New
57	(c)	Ch-5	82
58	(b)	Ch-5	83
59	(a)	Ch-5	84
60	(a)	Ch-5	85