

11. For the start of respiration, a living cell requires?
 (a) Glucose (b) Glucose + O₂
 (c) O₂ (d) Glucose + ATP
12. The longest part of alimentary canal in human body is
 (a) Small intestine (b) Large intestine
 (c) Food pipe (d) None of the above
13. Following form of energy acts as internal energy reserve for plants
 (a) Protein (b) Carbohydrates
 (c) Starch (d) Fructose
14. The moves water and minerals obtained from the soil.
 (a) phloem (b) xylem
 (c) parenchyma (d) collenchyma
15. When the materials like sucrose are transferred to phloem tissue, the osmotic pressure of the tissue leading to of water into/from it.
 (a) Increases, entry (b) Decreases, entry
 (c) Increases, exit (d) Decreases, exit
16. The purpose of making urine is to:
 (a) filter out waste products from the blood
 (b) filter out minerals from the blood
 (c) filter out water from the blood
 (d) none of these
17. The field of view is maximum for
 (a) Plane mirror (b) Concave mirror
 (c) Convex mirror (d) Cylindrical mirror
18. A virtual image three times the size of the object is obtained with a concave mirror of radius of curvature 24 cm. The distance of the object from the mirror is
 (a) 20 cm (b) 10 cm
 (c) 12 cm (d) 5 cm
19. In which of the following, the image of an object placed at infinity will be highly diminished and point sized?
 (a) Concave mirror only
 (b) Convex mirror only
 (c) Convex lens only
 (d) Concave mirror, convex mirror, concave lens and convex lens
20. A thin layer of water is transparent but a very thick layer of water is:
 (a) translucent (b) opaque
 (c) most transparent (d) none of these
21. 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
22. Mark the correct statement:
 (a) Centre of curvature is represented by "C"
 (b) Centre of curvature always lies inside the reflecting surface
 (c) Centre of curvature always lies in front of mirror
 (d) All of these
23. The centre of the sphere from which the spherical mirror has been formed is called
 (a) pole
 (b) centre of curvature
 (c) focus
 (d) none of these
24. Angle of deviation through a prism of angle 60° when angles of incidence and emergence are 40° each is:
 (a) 40°
 (b) 30°
 (c) 60°
 (d) None of these

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 the strong acid?
 (a) CH₃COOH (b) HCN
 (c) HBr (d) HF
26. Which of the following acid present in curd?
 (a) Acetic acid (b) Citric acid
 (c) Oxalic acid (d) Lactic acid
27. 2 mL each of concentrated HCl, HNO₃ and a mixture of concentrated HCl and concentrated HNO₃ 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) Al (b) Au
 (c) Cu (d) Pt

28. Activity series of metals is a series in which metals are arranged according to their:
- (a) reactivity (b) conductivity
(c) malleability (d) ductility

29. The reagent used to distinguish iron (II) chloride and iron (III) chloride is
- (a) Warm water (b) distilled water
(c) NaOH (d) dil. HCl

30. The metal used to recover copper from an aqueous solution of copper sulphate is :
- (a) Na (b) Ag
(c) Hg (d) Fe

31. **Assertion :** H_2CO_3 is a strong acid.
Reason : A strong acid dissociates completely or almost completely in water.
- (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 :** 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 :** Aerobic animals are not truly aerobic.
Reason : Anaerobically they produce lactic acid.
- (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 :** Convex mirror is used as a rear view mirror.
Reason : Convex mirror always forms inverted image.
- (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.

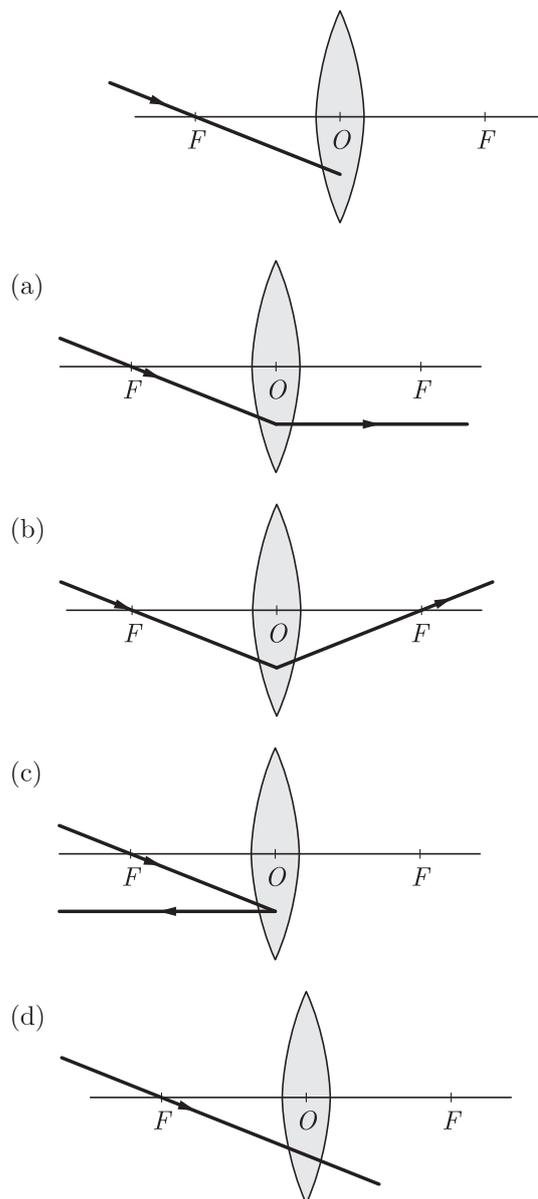
35. Which of the following is not a mineral acid?
- (a) Hydrochloric acid (b) Citric acid
(c) Sulphuric acid (d) Nitric acid

36. Which of the following statements about the given reaction are correct?
- $$3\text{Fe(s)} + 4\text{H}_2\text{O(g)} \longrightarrow \text{Fe}_3\text{O}_4\text{(s)} + 4\text{H}_2\text{(g)}$$
1. Iron metal is getting oxidised.
2. Water is getting reduced.
3. Water is acting as reducing agent.
4. Water is acting as oxidising agent.
- (a) 1, 2 and 3 (b) 3 and 4
(c) 1, 2 and 4 (d) 2 and 4

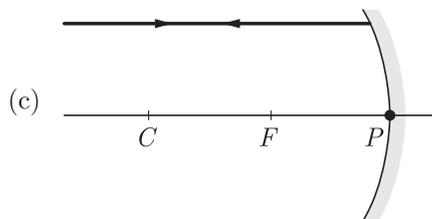
37. The principal nitrogenous excretory compound in humans is synthesised?
- (a) In the liver but eliminated mostly through kidneys
(b) In kidneys but eliminated mostly through liver
(c) In kidneys as well as eliminated by kidneys
(d) In liver and also eliminated by the same through bile.

38. 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

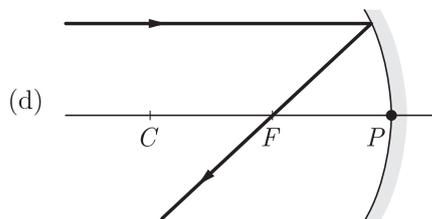
39. Which of the following ray diagrams is correct for the ray of light incident on a lens shown in Figure?



40. In which of the following, the image of an object placed at infinity will be highly diminished and point sized?
- Concave mirror only
 - Convex mirror only
 - Convex lens only
 - Concave mirror, convex mirror, concave lens and convex lens



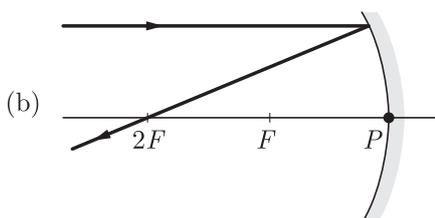
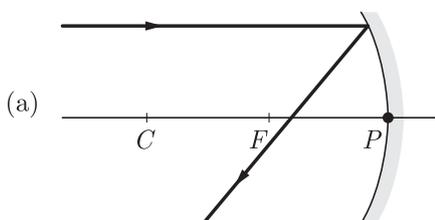
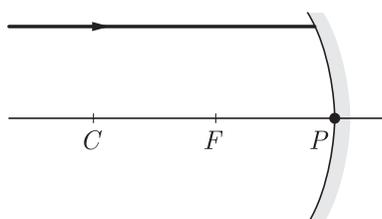
41. Which of the following substance is obtained from the soil by the plants:
- oxygen
 - carbon dioxide
 - nitrogen
 - all of the above



42. Oxygen is a waste product generated during in plants.
- Respiration
 - Photosynthesis
 - Both respiration and photosynthesis
 - None of the above

43. According to laws of reflection of light
- Angle of incidence is equal to the angle of reflection
 - Angle of incidence is less than the angle of reflection
 - Angle of incidence is greater than the angle of reflection
 - None of these

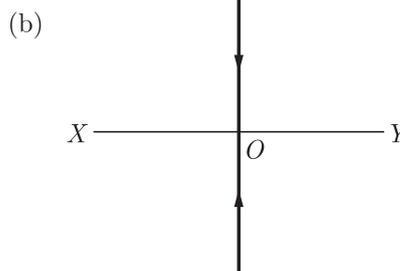
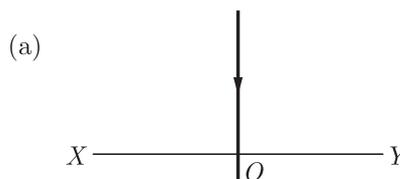
44. Which of the following ray diagrams is correct for the ray of light incident on a concave mirror as shown in Figure?

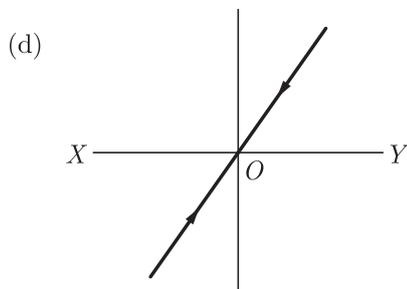
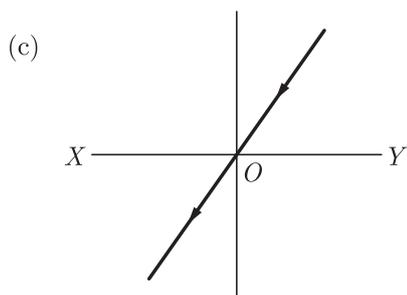


45. In an experiment with a rectangular glass slab, a student observed that a ray of light incident at an angle of 55° with the normal on one face of the slab, after refraction strikes the opposite face of the slab before merging out into air making an angle of 40° with the normal. What value would you assign to the angle of refraction and angle of emergence?
- $40^\circ, 55^\circ$
 - $55^\circ, 40^\circ$
 - $10^\circ, 20^\circ$
 - $40^\circ, 90^\circ$

46. For the same angle of incidence in media P , Q and R , the angles of refraction are 45° , 35° and 15° respectively. In which medium will the velocity of light be minimum?
- P
 - Q
 - R
 - Q and R

47. Which of the following figures shows no refraction of light when it is incident normally on a boundary of two media?





48. If copper is kept open in air, it slowly loses its shining brown surface and gains a green coating. It is due to the formation of
- CuSO_4
 - CuCO_3
 - $\text{Cu}(\text{NO}_3)_2$
 - CuO

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)

For making baking powder, which is a mixture of baking soda (sodium hydrogen carbonate) and a mild edible acid such as tartaric acid. When baking powder is heated or mixed in water, the following reaction takes place:



Sodium salt of acid

Carbon dioxide produced during the reaction causes bread or cake to rise making them soft and spongy.

Sodium hydrogen carbonate is also an ingredient in antacids. Being alkaline, it neutralises excess acid in the stomach and provides relief.

It is also used in soda-acid fire extinguishers.

49. Which of the following compound is used in soda-acid fire extinguishers?

- Plaster of Paris
- Baking soda
- Washing soda
- Bleaching powder

50. is the chemical name of baking soda.

- Calcium hydrogen carbonate
- Sodium hydrogen carbonate
- Calcium carbonate
- Sodium carbonate

51. Baking powder is a mixture of the following compounds:

- Bleaching powder and citric acid
- Baking soda and oxalic acid

- Washing soda and citric acid
- Baking soda and tartaric acid

52. Which ingredient is used in anti-acids which gives relief in stomach by neutralising excess acid?

- Magnesium hydroxide
- Sodium carbonate
- Aluminium hydroxide
- Sodium hydrogen carbonate

Case Based Questions: (53-56)

The length of the small intestine differs in various animals depending on the food they eat. Herbivores eating grass need a longer small intestine to allow the cellulose to be digested. Meat is easier to digest, hence carnivores like tigers have a shorter small intestine.

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.

53. Which category of animals have shorter small intestine?

- Carnivores
- Omnivores
- Herbivores
- Decomposers

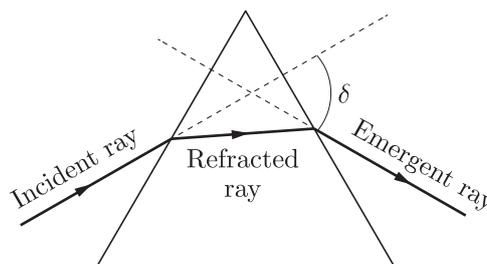
54. Why herbivores have longer small intestine?
- To digest fats
 - To digest proteins
 - To digest cellulose
 - To digest carbohydrates
55. The small intestine is the site of the complete digestion of:
- Carbohydrates
 - Proteins
 - Fats
 - All of these
56. What is the nature of food in the stomach and what is done for the pancreatic enzymes to act?
- Acidic, made more acidic
 - Alkaline, made acidic
 - Acidic, made alkaline
 - Alkaline, made more alkaline

Case Based Questions: (57-60)

Newton found that when a beam of white light passes through a prism it is spread out by the prism into a band of all the colours of the rainbow from red to violet. The band of colours is called a spectrum and the separation of the colours by the prism is known as dispersion. He concluded that white light is a mixture of light of various colours and identified red, orange, yellow, green, blue, indigo and violet.

All colours of light travel at the same speed in a vacuum. When they enter a transparent substance like glass, they all slow down but by different amounts. Because they slow down, they are refracted but because they slow down by different amounts, different colours are refracted through different angles.

57. Which of the following statements is correct regarding the propagation of light of different colours of white light in air?
- Red light moves fastest.
 - Blue light travels faster than green light.
 - All colours of white light move with the same speed.
 - Yellow light moves with the mean speed as that of red and violet lights.
58. A ray of light passes through a prism as shown in figure



The angle δ is known as

- angle of emergence
 - angle of dispersion
 - angle of prism
 - angle of deviation
59. Splitting of white light into seven colours on passing through a glass prism is called
- scattering
 - refraction
 - dispersion
 - reflection
60. Rainbow is formed due to
- diffraction and dispersion
 - reflection only
 - scattering and refraction
 - total internal reflection and dispersion

SAMPLE PAPER - 29 Answer Key

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
1.	(b)	Ch-1	69
2.	(b)	Ch-2	56
3.	(b)	Ch-3	72
4.	(b)	Ch-1	50
5.	(b)	Ch-2	47
6.	(c)	Ch-1	98
7.	(a)	Ch-1	9
8.	(a)	Ch-2	35
9.	(d)	Ch-2	130
10.	(d)	Ch-1	72
11.	(a)	Ch-4	203
12.	(a)	Ch-4	61
13.	(c)	Ch-4	28
14.	(b)	Ch-4	139
15.	(a)	Ch-4	147
16.	(a)	Ch-4	153
17.	(c)	Ch-5	66
18.	(c)	Ch-5	173
19.	(d)	Ch-5	58
20.	(a)	Ch-5	59
21.	(d)	Ch-5	60
22.	(a)	Ch-5	New
23.	(b)	Ch-5	New
24.	(d)	Ch-6	21
25.	(c)	Ch-2	129
26.	(d)	Ch-2	110
27.	(b)	Ch-3	70
28.	(a)	Ch-3	47
29.	(c)	Ch-2	146
30.	(d)	Ch-3	109
31.	(d)	Ch-2	167

Paper Q. no.	Correct Option	Chapter no	Question Bank Q. no.
32.	(c)	Ch-1	157
33.	(a)	Ch-4	230
34.	(c)	Ch-5	180
35.	(b)	Ch-2	26
36.	(c)	Ch-1	62
37.	(a)	Ch-4	116
38.	(b)	Ch-4	131
39.	(a)	Ch-5	56
40.	(d)	Ch-5	58
41.	(c)	Ch-4	146
42.	(b)	Ch-4	162
43.	(a)	Ch-5	61
44.	(d)	Ch-5	55
45.	(a)	Ch-5	29
46.	(c)	Ch-5	32
47.	(a)	Ch-5	93
48.	(b)	Ch-3	7
49.	(b)	Ch-3	228
50.	(b)	Ch-3	229
51.	(d)	Ch-3	230
52.	(d)	Ch-3	231
53.	(a)	Ch-4	New
54.	(c)	Ch-4	New
55.	(d)	Ch-4	New
56.	(c)	Ch-4	New
57.	(c)	Ch-5	87
58.	(d)	Ch-5	88
59.	(c)	Ch-5	89
60.	(d)	Ch-5	90