INDIAN SCHOOL AL WADI AL KABIR

DEPARTMENT OF SCIENCE

Sample Question Paper 1 (TERM – I)
2021-22
Class X
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.

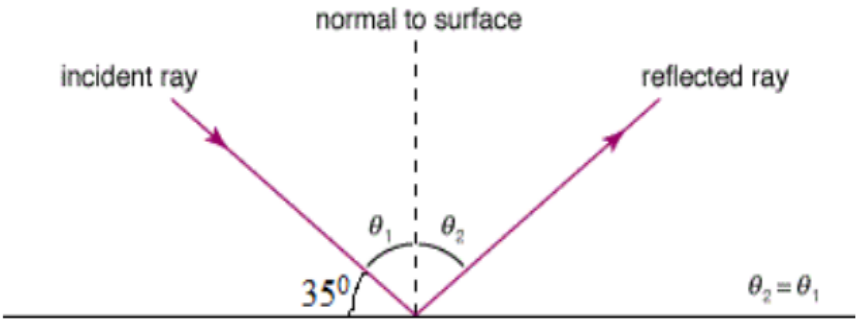
SECTION - A

Section – A consists of 24 questions. Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

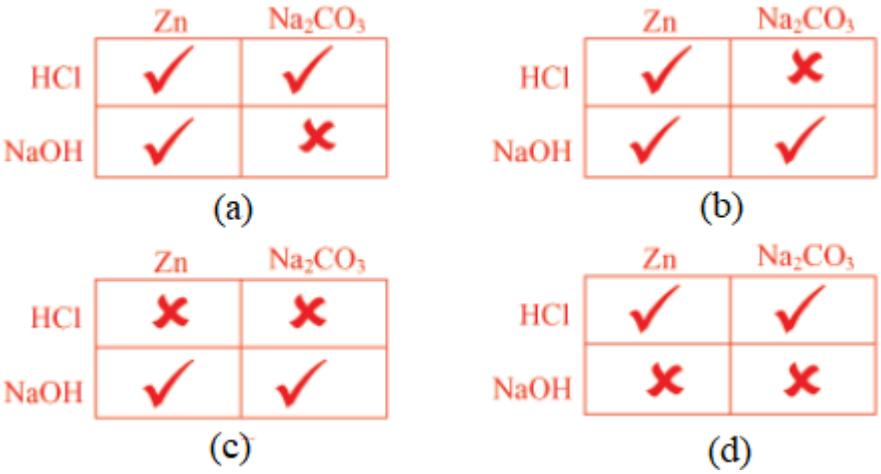
1. Ionic compounds have _____
   A. low melting and high boiling points.
   B. high melting and low boiling points.
   C. low melting and low boiling points.
   D. high melting and high boiling points

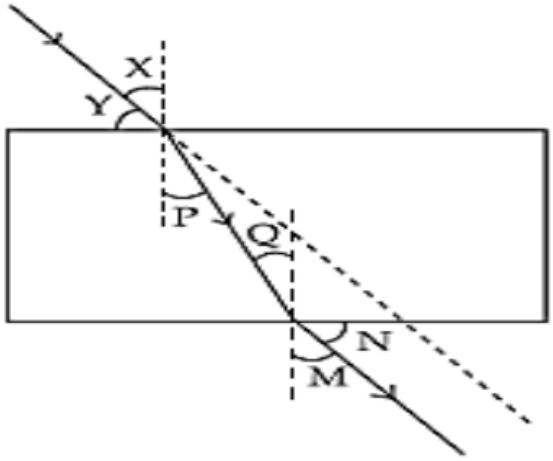
2. Find the angle of incidence and the angle of reflection from the diagram

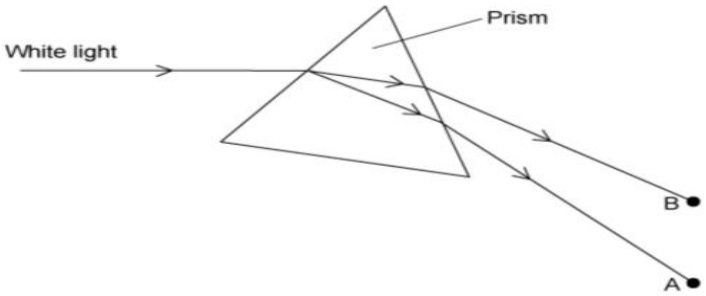
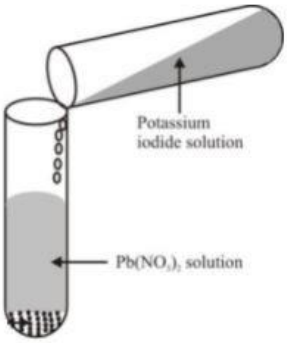


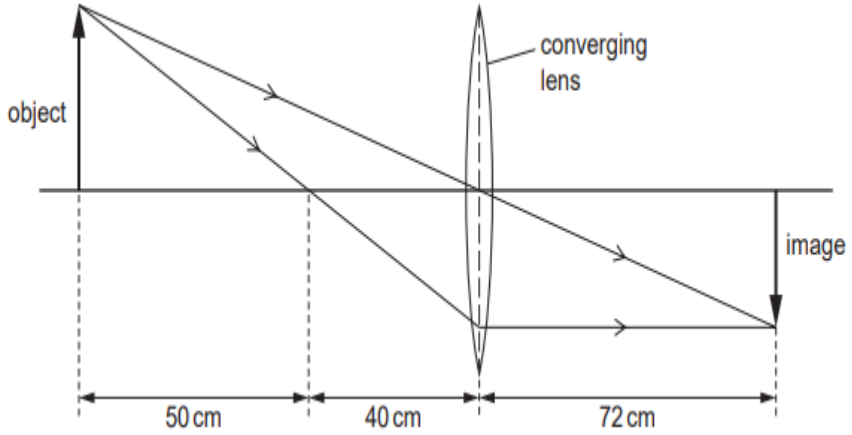
   A. 55^0, 45^0
   B. 45^0, 55^0
   C. 55^0, 55^0
   D. 45^0, 45^0

3.	When sodium reacts with cold water, the product formed will be- A. Na_2O B. NaOH C. Na_2CO_3 D. All of these
4.	The correct sequence of anaerobic respiration in yeast is – A. Glucose $\xrightarrow{cytoplasm} Pyruvate \xrightarrow{Mitochondria} Ethanol + Carbon\ dioxide$ B. Glucose $\xrightarrow{cytoplasm} Pyruvate \xrightarrow{Cytoplasm} Lactic\ acid$ C. Glucose $\xrightarrow{cytoplasm} Pyruvate \xrightarrow{Mitochondria} Lactic\ acid$ D. Glucose $\xrightarrow{cytoplasm} Pyruvate \xrightarrow{cytoplasm} Ethanol + Carbon\ dioxide$
5.	We can get real and highly diminished or diminished size of image by convex lens in the following conditions when object is placed at- (i)Infinity (ii) beyond 2F1 (iii) At F1 (iv)Between F1 and O Choose the correct option A. (i) and (ii) B. (i) and(iii) C. (i)and (iv) D. (ii) and (iv)
6	There are certain rules for the image formation in spherical mirror. Which of the following are applicable in convex mirror? (i) In a convex mirror a ray of light parallel to the principal axis after reflection appears to diverge from the focus. (ii) In a convex mirror a ray of light directed towards the centre of curvature after reflection is reflected back along the same direction. (iii) In a convex mirror a ray of light passing through the optical centre goes without any deviation. (iv) In a convex mirror a ray of light directed towards the focus after reflection goes parallel to the principal axis. Choose the correct option A. (i)(ii) and (iii) B. (i) (ii)and (iv) C. (ii) (iii)and (iv) D. (i) (iii)and (iv)
7.	Four students studied reactions of Zinc and Sodium carbonate with dilute HCl and dilute NaOH solutions and presented their results as follows. The tick mark represents evolution of gas whereas cross mark represents absence of any reaction.

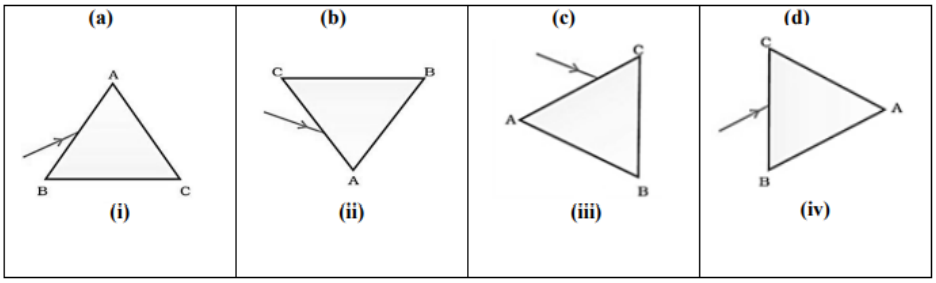
	 The right set of observations is that of student A. a B. b C. c D. d
8.	…… liberated during photosynthesis comes from water. A. Oxygen B. Chlorophyll C. Carbon dioxide D. Glucose
9.	A few drops of iodine solution were put on discoloured leaf. The discoloured leaf turned blue-black in colour. This indicates that the green areas of the leaf had – A. complex proteins B. simple proteins C. starch D. Fats
10.	Choose the forms in which most plants absorb nitrogen i) Proteins ii) Nitrates and Nitrites iii) Urea iv) Atmospheric nitrogen A. (i) and (ii) B. (ii) and (iii) C. (iii) and (iv) D. (i) and (iv)
11.	Solid Calcium oxide was taken in a container and water was added slowly to it Choose the correct observations made in the experiment.  i. Temperature is raised. ii. The gas turns lime water milky iii. Calcium hydroxide is formed

	iv. It's a combination reaction A. i and iii B. ii and iii C. i and iv D. i, iii and iv
12.	For the refraction through a rectangular glass slab the diagram is given below. The angle of incidence, angle of emergence and angle of refraction are respectively.  A. X,P,M B. X,M,P C. Y,M,P D. X,N,P
13.	The equation - $Cu + xHNO_3 \rightarrow Cu(NO_3)_2 + yNO2 + 2H_2O$ The values of x and y are A. 3 and 5 B. 8 and 6 C. 4 and 2 D. 7 and 1
14.	The danger signals are red in colour A. Least absorbed by fog or smoke B. Strongly absorbed by fog and smoke C. Least scattered by fog or smoke D. Strongly scattered by fog or smoke
15.	Which of the following equations is not an example of single displacement reaction? A. $2Al + Fe_2O_3 \rightarrow Al_2O_3 + 2Fe$ B. $Ca + Cl_2 \rightarrow CaCl_2$ C. $2KI + Cl_2 \rightarrow 2KCl + I_2$ D. $2Na + 2H_2O \rightarrow 2NaOH + H$
16.	One cell thick blood vessel are called _____ A. Arteries B. Veins C. Capillaries D. Pulmonary artery

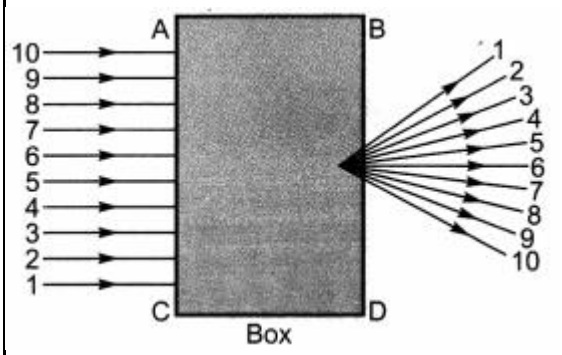
17.	Caustic soda is the common name for _____ A. $Mg(OH)_2$ B. KOH C. $Ca(OH)_2$ D. NaOH
18.	The diagram shows the white light passing through the prism  Which of the following gives colours in the correct order from A to B? A. Red, Green, Violet B. Red, Violet, Green C. Violet, Red, Green D. Violet, Green, Red
19.	Calcium hydroxide (slaked lime) is used in _____ A. Plastics and dyes B. Fertilizers C. Antacids D. White washing
20.	As light from a far-off star comes down towards the earth, it _____ A. bends away from the normal. B. bends towards the normal. C. gets reflected back completely. D. does not bend at all.
21.	What is observed in the following reaction?  A. The solution turned red B. Yellow precipitate is formed C. White precipitate is formed D. The reaction mixture becomes hot

22.	The ray diagram shows the image of an object formed by a converging lens  What is the focal length of the lens? A. 40cm B. 50cm C. 72cm D. 90cm
23.	What happens when a solution of an acid is mixed with a solution of a base in a test tube? i. The temperature of the solution increases ii. The temperature of the solution decreases iii. The temperature of the solution remains the same iv. Salt formation takes place A. i only B. i and iii C. ii and iii D. i and iv
24.	The correct pathway of blood in circulatory system is A. Atria ------- > Ventricles ----------> Arteries ----------> Veins B. Ventricles----------> Atria----------> Veins----------> Arteries C. Ventricles----------> Veins ----------->Arteries----------> Atria D. Veins----------> Ventricles----------> Atria----------> Arteries
SECTION – B	
Section - B consists of 24 questions (Sl. No.25 to 48). Attempt any 20 questions from this section. <u>The first attempted 20 questions would be evaluated.</u>	
25.	Farmers neutralize the effect of acidity on soil by adding _____ A. Slaked Lime B. Gypsum C. Caustic Soda D. Baking Soda

26. A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in below Figure. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



27. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as show in the figure. Which of the following could be inside the box?



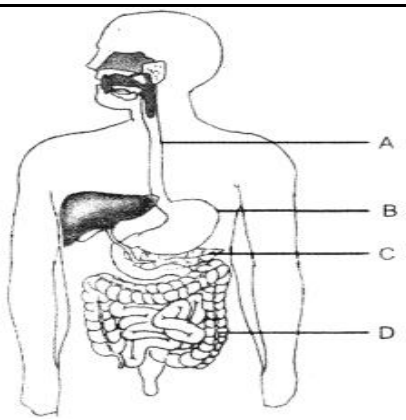
A. Concave lens
B. Rectangular glass slab
C. Prism
D. Convex lens

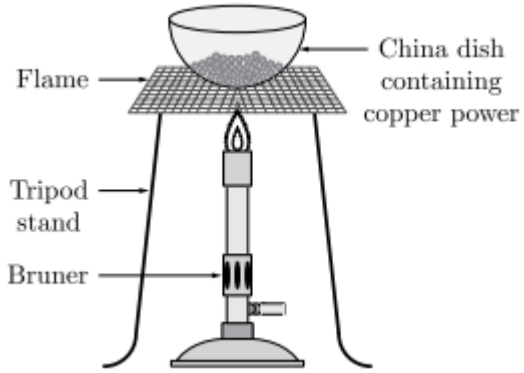
28. Match the chemical substances given in column (A) with their appropriate application given in column (B)

	Column A		Column B
a	Bleaching powder	i	Preparation of glass
b	Baking soda	ii	Production of H_2 and Cl_2
c	Washing soda	iii	Decolourisation
d	Sodium chloride	iv	Antacid

A. a- (ii), b- (i), c- (iv), d- (iii)
B. a- (iii), b- (ii), c- (iv), d- (i)
C. a- (iii), b- (iv), c- (i), d- (ii)
D. a- (ii), b- (iv), c- (i), d- (iii)

29. Find out the correct labelling for the figure given below -

	 A. Trachea, stomach, Pancreas, large intestine B. Oesophagus, stomach, Pancreas, large intestine C. small intestine, stomach, Pancreas, large intestine D. Trachea, stomach, small intestine, large intestine
30.	The nature of the image formed by concave mirror when the object is placed between the focus (F) and centre of curvature (C) of the mirror observed by us is A. real, inverted and diminished B. virtual, erect and smaller in size C. real, inverted and enlarged D. virtual, upright and enlarged
Question No. 31 to 34 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: A. Both A and R are true and R is the correct explanation of A B. Both A and R are true and R is not the correct explanation of A C. A is true but R is false D. A is False but R is true	
31.	**Assertion**: The red light bends the least while the violet bends the most. **Reason**: Red light has short wavelength whereas violet has long wavelength.
32.	**Assertion**: Chips packets are flushed with nitrogen gas. **Reason**: Nitrogen being non-reactive prevents the rancidity of chips.
33.	**Assertion:** Alcohol fermentation takes place in the absence of oxygen. **Reason**: It occurs in yeast cell.
34.	**Assertion**: Lungs always contain a residue volume of air. **Reason**: It provides sufficient time for oxygen to be absorbed and for carbon dioxide to be released.
35.	A small amount of copper power is heated as shown in the figure.



Which reaction shows the above process?

A. $2Cu + O_2 \rightarrow 2CuO$

B. $CuO + H_2 \rightarrow Cu + H_2O$

C. $Cu + O_2 \rightarrow 2CuO$

D. $CuO + N_2 \rightarrow Cu + N_2O$

36. A non-metal X exists in two different forms Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Here X, Y and Z are

	X	Y	Z
A	Carbon	Diamond	Graphite
B	Graphite	Carbon	Diamond
C	Carbon	Graphite	Diamond
D	Diamond	Graphite	Carbon

37. The radius of curvature of concave mirror is 12 cm. Then, the focal length will be

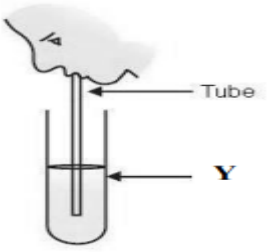
A. 12 cm

B. 6 cm

C. -24 cm

D. -6 cm

38. Observe the given diagram and answer the following question



To test the release of CO_2 gas during respiration, the chemical used in test tube (Y) is

A. Lime

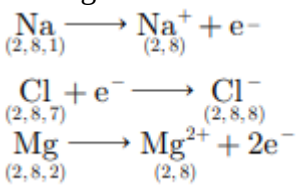
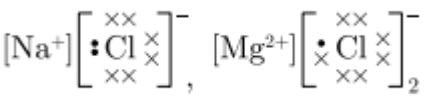
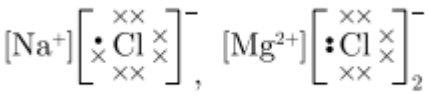
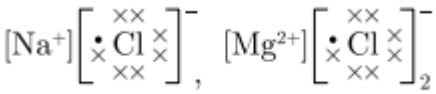
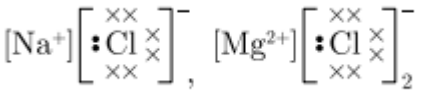
B. Lime water

C. Calcium carbonate

D. Marble

39. Refractive index of diamond with respect to glass is 1.6 and absolute refractive index of glass is 1.5. Find out the absolute refractive index of diamond.

A. 0.24

	B. 2.4 C. 1.4 D. 1.6
40.	Observe the given reactions and answer the question that follows  Which of the following are correct representations for the ionic compounds formed of these ions? A.  B.  C.  D. 
41.	How will you protect yourself from the heat generated while diluting a concentrated acid? A. By adding acid to water with constant stirring B. By adding water to acid with constant stirring C. By adding water to acid followed by base D. By adding base to acid with constant stirring.
42.	Only two of the following statements accurately describe what happens in the mouth? I. Amylase breaks down large starch molecules into smaller maltose molecules. II. Chewing increases the surface area of food for digestion. III. Saliva emulsifies fats into smaller droplets. IV. Teeth breakup large insoluble molecules into smaller soluble molecules. Which statements are correct? A. I and II B. III and IV C. II and III D. I and IV

43. The formula to calculate the refractive index is

A. n=cv

B. n=v/c

C. n=c/v

D. v=nc

44. Mixing of an acid or base with water is known as _____

A. dilution
B. neutralisation
C. indicators
D. Chlor alkali process

45. The organic acid present in tomato is

A. oxalic acid
B. lactic acid
C. malic acid
D. tartaric acid

46. If the powers of the lenses L1 and L2 are in the ratio of 4:1, what would be the ratio of the focal length of L1 and L2?

A. 4:1
B. 1:4
C. 2:1
D. 1:1

47. Match the **Column I** with **Column II** and select the most appropriate option from the codes given.

Column I	**Column II**
a. Platelets	1. Size of fist
b. Heart	2. Warm-blooded animals
c. Veins	3. Translocation
d. Birds	4. Valves
e. Sieve tubes	5. Blood clotting

Codes

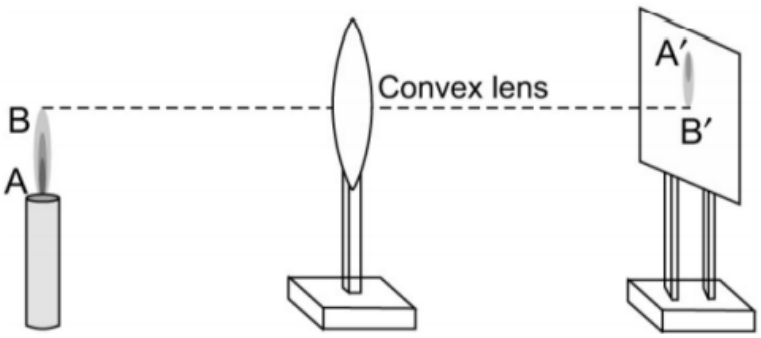
	A	b	C	d	e
A	1	3	5	4	2
B	5	1	4	2	3
C	5	1	4	3	2
D	5	1	4	2	1

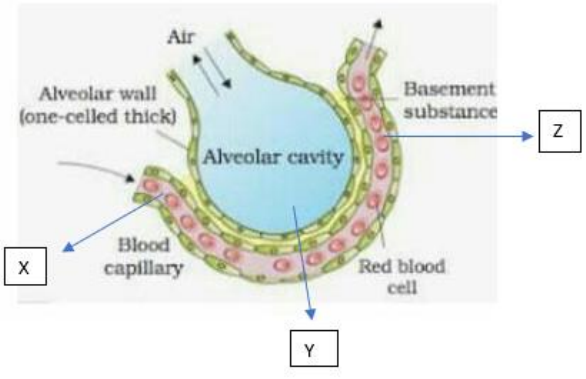
48. Crocodiles have……. chambered heart.

A. two
B. three
C. four
D. None of these.

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	A scale for measuring hydrogen ion concentration in a solution, called pH scale has been developed. The p in pH stands for 'potenz' in German, meaning power. On the pH scale we can measure pH generally from 0 (very acidic) to 14 (very alkaline). pH should be thought of simply as a number which indicates the acidic or basic nature of a solution. Higher the hydronium ion concentration, lower is the pH value.
49.	A solution turns red litmus blue. Its pH is likely to be- A. 2 B. 4 C. 7 D. 10
50.	pH of Blood is _____- A. 6.4 B. 7.4 C. 4.7 D. 6.4
51.	A solution has pH 9. On dilution the pH value A. decreases B. increases C. remains the same D. none of these
52.	A salt derived from strong acid and weak base will dissolve in water to give a solution which is _____ A. acidic B. basic C. neutral D. none of these
CASE	Aditya and his friend Manoj placed a candle flame in front of a convex lens at various distances from it and obtained the image of the candle flame on a white screen. He noted down the position of the candle, screen and the lens as under Position of candle = 20 cm Position of convex lens = 50 cm Position of the screen = 80 cm 

53.	What is the position of the image formed from the convex lens? A. 80 cm B. 50 cm C. 30 cm D. 60 cm
54.	What is the focal length of the convex lens? A. 30 cm B. 15 cm C. -16 cm D. 16 cm
55.	Where will the image be formed if he shifts the candle towards the lens at a position of 35 cm? A. At focus B. Between focus and pole C. At infinity D. Between f2 and f1
56.	Which of the following statement describes the best about the nature of the image formed if Aditya shifts the candle towards the lens to 36 cm? A. The nature of the image formed will be virtual, inverted and magnified. B. The nature of the image formed will be virtual, erect and magnified. C. The nature of the image formed will be virtual, erect and diminished. D. The nature of the image formed will be real, inverted and diminished
CASE	Within the lungs, the passage divides into small tubes which finally terminates into balloon-like structures which are called alveoli. The alveoli provide a surface where the exchange of gases can take place. The walls of the alveoli contain a network of blood vessels. As we breathe in, we lift our ribs and flatten our diaphragm and the chest cavity becomes large lift.
57.	The diagram shows a section through an alveolus and a blood capillary.  What are the oxygen concentrations in X, Y, and Z?

	X	Y	Z
A	High	Low	High
B	High	Low	Low
C	Low	High	High
D	Low	High	Low

58.	Within the lungs the passage divides into small tubes called….. A. Trachea B. Larynx C. bronchus D. Bronchioles
59.	_____ finally terminates into balloon-like structures. A. Alveoli B. Trachea C. bronchioles D. bronchus
60.	The walls of alveoli contain extensive network of blood capillaries because – A. They ensure a proper supply of blood on the walls. B. They ensure a proper supply of blood to different parts of the body. C. They ensure the proper exchange of gases from the walls of alveoli. D. They ensure the proper functioning of the heart.

Q.NO	ANSWERS
	Section - A
1.	D
2.	C 55^0, 55^0 (Angle of incidence=angle of reflection)
3.	B
4.	D Glucose $\xrightarrow{cytoplasm} Pyruvate \xrightarrow{cytoplasm} Ethanol + Carbon\ dioxide$
5.	A (i) and (ii)
6.	B (i) (ii)and (iv)
7.	A
8.	A
9.	C
10.	B (ii) and (iii)
11.	D
12.	B. X,M,P
13.	C
14.	C Least scattered by fog or smoke
15.	B
16.	C Capillaries
17.	D
18.	D Violet, Green, Red

19.	D
20.	B
21.	B bends towards the normal.
22.	A 40cm
23.	D
24.	A a) Atria -------> Ventricles ----------> Arteries ----------> Veins
Section - B	
25.	A
26.	B
27.	D Convex lens
28.	C
29.	B Oesophagus, stomach, Pancreas, large intestine
30.	C real, inverted and enlarged
31.	C
32.	A
33.	A
34.	A
35.	A
36.	A
37.	D -6 cm The focal length of a concave mirror is always negative as f is in front of the mirror Therefore, 2f=-R -R/2=f -12/2=f = -6cm
38.	B Lime water

39.	B Refractive index of diamond with respect to glass $n_{dg}=1.6$ Refractive index of glass $n_g=1.5$ Refractive index of diamond n_d=? Refractive index of diamond with respect to glass $n_{dg}= n_d/ n_g$ So,the refractive index of diamond $n_d=n_{dg}\times n_g$ or, $n_d=1.6\times1.5=2.4$ hence,the refractive index of diamond is 2.4
40.	C
41.	A
42.	A I and II
43.	C n=c/v
44.	A
45.	A
46.	B 1:4 P=1/f $P_1=1/f_1$ and $P_2=1/f_2$ $P_1/P_2=4/1$, hence $(1/f_1)/(1/f_2) = 4/1$ Hence $f_1/f_2=1/4$ b) ¼
47.	B

48.	C four
Section - C	
49.	D
50.	B
51.	A
52.	A
53.	C 30 cm Image distance, v = Position of screen – Position of convex lens v = 80 – 50 cm = **30 cm**
54.	B 15 cm Object distance, u = Position of convex lens – Position of candle $u = -(50 - 20) = -30$ **cm** $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$ $f = 15$ **cm** $\Rightarrow \quad \frac{1}{f} = \frac{1}{30} + \frac{1}{30} = \frac{2}{30}$
55.	C When the candle is shifted towards the lens at a position of 35 cm. Object distance, u = –(50 – 35) = –15 cm $\frac{1}{f} = \frac{1}{v} - \frac{1}{u} \Rightarrow \frac{1}{15} = \frac{1}{v} + \frac{1}{15}$ $\Rightarrow \frac{1}{v} = 0$ $\Rightarrow v = \infty$ (Infinite) When object is placed at focus, image is formed at **infinity**.
56.	B The nature of the image formed will be virtual, erect and magnified
57.	C
58.	D Bronchioles

59.	C bronchioles
60.	C They ensure the proper exchange of gases from the walls of alveoli.