

INDIAN SCHOOL AL WADI AL KABIR
DEPARTMENT OF SCIENCE 2021 - 22
Class-X-SCIENCE
MIDTERM QUESTION PAPER
SET I

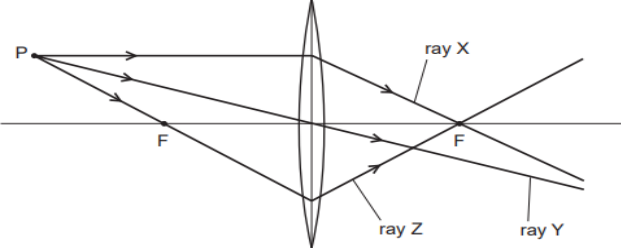
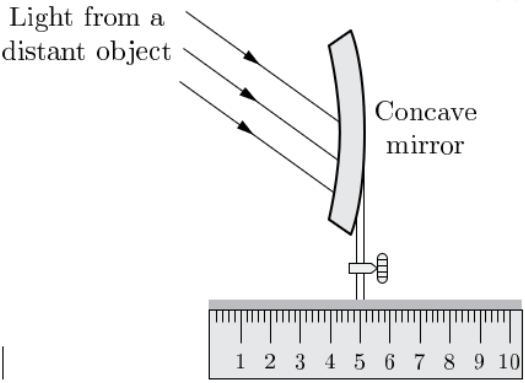
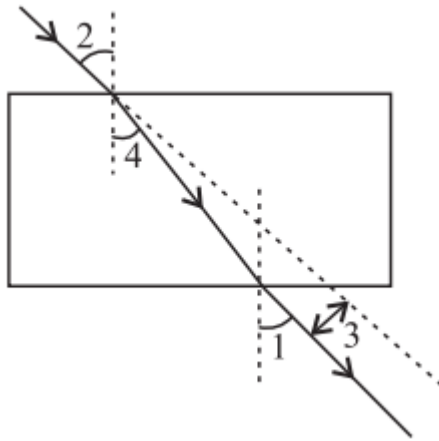
S.NO.	QUESTIONS	MARKS ALLOTTED
PHYSICS		
1	<p>A student draws three rays of light from point P through a converging lens. The point labelled F is the principal focus of the lens.</p>  <p>Which of the rays are drawn correctly?</p> <p>a) ray Y only b) ray Z only c) ray X and ray Y d) ray X and ray Z</p>	1
2	<p>In the below set-up, the focal length of the concave mirror is 4.0 cm. Where should the screen be placed on the scale to obtain a sharp image?</p> <p>Light from a distant object</p>  <p>(a) 0cm on the scale in front of the mirror (b) 1cm on the scale in front of the mirror (c) 9cm on the scale behind the mirror (d) 4cm on the scale in front of the mirror</p>	1
3	<p>The correct sequencing of angle of incidence, angle of emergence, angle of refraction and lateral displacement shown in the following</p>	1

diagram by digits 1, 2, 3 and 4 is:



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

4

Assertion: Keeping a point object fixed, if a plane mirror is moved, the image will also move.

Reason: In case of a plane mirror, distance of object and its image is equal from any point on the mirror.

- a) Both A and R are true, and R is correct explanation of the assertion.
 b) Both A and R are true, but R is not the correct explanation of the assertion.
 c) A is true, but R is false.
 d) A is false, but R is true.

1

5

Assertion: A convex lens has -4 dioptre power having a focal length 0.25 m

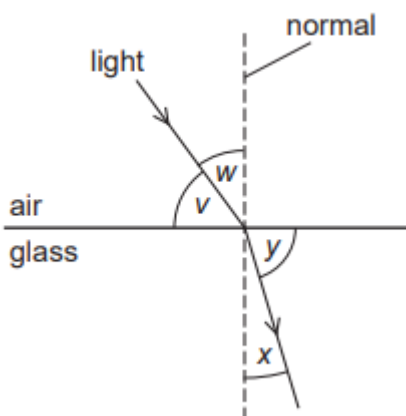
Reason: According to the new cartesian sign convention, the focal length of a convex lens is positive.

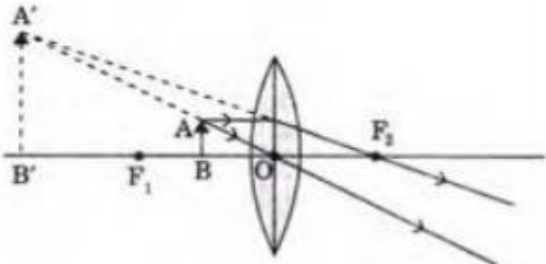
- a) Both A and R are true, and R is correct explanation of the assertion.
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1

Material medium	Refractive index
Air	1.003
Water	1.33
Kerosene	1.44
Benzene	1.50
Crown glass	1.52
Dense flint glass	1.65
Diamond	2.42

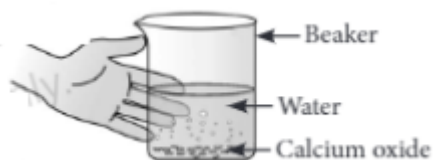
The table below lists the refractive index of different media. The refractive index provides a measure of the relative speed of light in different media. Knowing the refractive indices of different media helps us to identify the direction in which way the light would bend

	while passing from one medium to another. Analyse the table and answer the following questions.											
6	The refractive index of dense flint glass is 1.65 and for water, it is 1.33 with respect to air, then the refractive index of the dense flint glass with respect to water is (a) 2.14 (b) 1.24 (c) 1.51 (d) 1.65	1										
7	The refractive index of transparent medium is greater than one because (a) Speed of light in vacuum < speed of light in transparent medium (b) Speed of light in vacuum > speed of light in transparent medium (c) Speed flight in vacuum = speed of light in transparent medium (d) Frequency of light wave changes when it moves from rarer to denser medium	1										
8	The diagram shows light travelling from air into glass. Four angles v, w, x and y are shown.  Which formula is used to calculate the refractive index n of the glass? A $n = \frac{\sin v}{\sin y}$ B $n = \frac{\sin v}{\sin x}$ C $n = \frac{\sin w}{\sin y}$ D $n =$	1										
9	How is refractive index of a medium depends on its optical density? (a)Refractive index is directly proportional to optical density. (b)Refractive index is inversely proportional to optical density. (c)Refractive index is equal to optical density. (d)Refractive index does not depend on optical density.	1										
10	The refractive indices of four media A, B, C and D are given in the following table: <table border="1" data-bbox="316 1825 1189 1944"> <thead> <tr> <th>Medium</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> </tr> </thead> <tbody> <tr> <td>Refractive index</td> <td>1.33</td> <td>1.50</td> <td>1.52</td> <td>2.40</td> </tr> </tbody> </table>	Medium	A	B	C	D	Refractive index	1.33	1.50	1.52	2.40	1
Medium	A	B	C	D								
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	<p>If light, travels from one medium to another, in which case the change in speed will be minimum?</p> <p>(a) A to B (b) B to C (c) C to D (d) A to D</p>	
11	<p>The radius of curvature of a concave mirror is -30cm the focal length is</p> <p>a. -30cm b. -3cm c. -15cm d. -60cm</p>	1
12	<p>A student conducts an activity using a concave mirror with focal length of 15 cm. He placed the object 30 cm from the mirror. Where is the image likely to form?</p> <p>(a) at 10 cm behind the mirror (b) at 30 cm behind the mirror (c) at 10 cm in front of the mirror (d) at 30 cm in front of the mirror</p>	1
13	 <p>The above lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.</p> <p>a) 4 cm b) 4 mm c) 6.67 mm d) 3.33 mm</p>	
CHEMISTRY		
14	<p>Which of the following is a displacement reaction?</p> <p>(a) $\text{MgCO}_3 \longrightarrow \text{MgO} + \text{CO}_2$ (b) $2\text{Na} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{H}_2$ (c) $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$ (d) $2\text{Pb}(\text{NO}_3)_2 \xrightarrow{\text{Heat}} 2\text{PbO} + 4\text{NO}_2 + \text{O}_2$</p>	1
15	<p>Magnesium ribbon is rubbed before burning because it has a coating of</p> <p>(a) basic magnesium carbonate (b) basic magnesium oxide (c) basic magnesium sulphide (d) basic magnesium chloride</p>	1

16	<p>What happens when a solution of an acid is mixed with a solution of a base in a test tube?</p> <p>(i) Temperature of the solution decreases (ii) Temperature of the solution increases (iii) Temperature of the solution remains the same (iv) Salt formation takes place</p> <p>(a) (i) and (iv) (b) (i) and (iii) (c) (ii) only (d) (ii) and (iv)</p>	1
17	<p>In terms of acidic strength, which one of the following is in the correct increasing order?</p> <p>(a) Water < Acetic acid < Hydrochloric acid (b) Water < Hydrochloric acid < Acetic acid (c) Acetic acid < Water < Hydrochloric acid (d) Hydrochloric acid < Water < Acetic acid</p>	1
18	<p>Which of the following statements about the given reaction are correct?</p> $3\text{Fe (s)} + 4\text{H}_2\text{O (g)} \rightarrow \text{Fe}_3\text{O}_4 \text{ (s)} + 4 \text{H}_2 \text{ (g)}$ <p>(i) Iron metal is getting oxidised (ii) Water is getting reduced (iii) Water is acting as reducing agent (iv) Water is acting as oxidising agent</p> <p>(a) (i), (ii) and (iii) (b) (iii) and (iv) (c) (i), (ii) and (iv) (d) (ii) and (iv)</p>	1
19	<p>Which of the following are exothermic processes?</p> <p>(i) Reaction of water with quick lime (ii) Dilution of an acid (iii) Evaporation of water (iv) Sublimation of camphor (crystals)</p> <p>(a) (i) and (ii) (b) (ii) and (iii) (c) (i) and (iv) (d) (ii) and (iv)</p>	1
20	<p>Assertion: Food materials are often packed in air tight container. Reason: Oxidation, resulting in rancidity, is prevented when Oxygen is cut off.</p> <p>a) Both A and R are true, and R is correct explanation of the assertion. b) Both A and R are true, but R is not the correct explanation of the assertion. c) A is true, but R is false. d) A is false, but R is true.</p>	1

21	<p>Assertion: $2\text{H}_2\text{S} + \text{O}_2 \longrightarrow 2\text{S} + 2\text{H}_2\text{O}$ is a redox reaction.</p> <p>Reason: In redox reaction, oxidation and reduction take place simultaneously.</p> <p>a) Both A and R are true, and R is correct explanation of the assertion.</p> <p>b) Both A and R are true, but R is not the correct explanation of the assertion.</p> <p>c) A is true, but R is false.</p> <p>d) A is false, but R is true.</p>	1
22	<p>Assertion: Antacids neutralize the effect of extra acid produced in the stomach during indigestion and thus provide relief.</p> <p>Reason: Antacids are mild bases.</p> <p>a) Both A and R are true, and R is correct explanation of the assertion.</p> <p>b) Both A and R are true, but R is not the correct explanation of the assertion.</p> <p>c) A is true, but R is false.</p> <p>d) A is false, but R is true.</p>	1
	<p><u>CASE STUDY QUESTION</u></p> <p>A reaction in which two or more reactants combine to form a single product is called a combination reaction.</p> <p>For example, calcium oxide reacts vigorously with water to form calcium hydroxide. The reaction is highly exothermic in nature, as lots of heat is produced during the reaction.</p> <p>$\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca}(\text{OH})_2 + \text{Heat}$</p> <p>Solution of Calcium hydroxide is used for white washing the walls. Calcium hydroxide reacts slowly with carbon dioxide in air to form a thin layer of calcium carbonate on the wall which gives a shiny appearance to wall. Calcium carbonate will form after two or three days of white wash.</p>	
23	<p>What is the chemical name of quick lime?</p> <p>(a) Calcium oxide</p> <p>(b) Calcium carbonate</p> <p>(c) Calcium hydroxide</p> <p>(d) Carbon dioxide</p>	1
24	<p>When carbon dioxide is passed through lime water,</p> <p>(a) calcium hydroxide is formed</p> <p>(b) lime water turns milky</p> <p>(c) white precipitate of CaO is formed</p> <p>(d) colour of lime water becomes green</p>	1
25	<p>Following observations are observed when calcium oxide reacts vigorously with water.</p>	1



Identify **the incorrect** observations.

- (I) It is an endothermic reaction.
- (II) Quick lime is produced.
- (III) It is a combination reaction.
- (IV) Slaked lime is produced.
- (V) It is an exothermic reaction.

- (a) (I) and (II)
- (b) (III) and (IV)
- (c) (I) and (III)
- (d) (III), (IV) and (V)

26	<p>Quick lime combines vigorously with water to form (A) which reacts slowly with the carbon dioxide in air to form (B). Identify the compounds(A) and (B).</p> <table border="1" data-bbox="379 851 1289 1120"> <thead> <tr> <th></th> <th>(A)</th> <th>(B)</th> </tr> </thead> <tbody> <tr> <td>(a)</td> <td>Calcium carbonate</td> <td>Calcium hydroxide</td> </tr> <tr> <td>(b)</td> <td>Calcium hydroxide</td> <td>Calcium carbonate</td> </tr> <tr> <td>(c)</td> <td>Calcium</td> <td>Calcium bicarbonate</td> </tr> <tr> <td>(d)</td> <td>Calcium bicarbonate</td> <td>Calcium</td> </tr> </tbody> </table>		(A)	(B)	(a)	Calcium carbonate	Calcium hydroxide	(b)	Calcium hydroxide	Calcium carbonate	(c)	Calcium	Calcium bicarbonate	(d)	Calcium bicarbonate	Calcium	1
	(A)	(B)															
(a)	Calcium carbonate	Calcium hydroxide															
(b)	Calcium hydroxide	Calcium carbonate															
(c)	Calcium	Calcium bicarbonate															
(d)	Calcium bicarbonate	Calcium															
27	<p>A substance 'X' is obtained by heating limestone in the absence of air. Identify 'X'.</p> <ul style="list-style-type: none"> (a) CaOCl_2 (b) Ca(OH)_2 (c) CaO (d) CaCO_3 	1															
BIOLOGY																	
28	<p>Which of the following prevents collapsing of trachea?</p> <ul style="list-style-type: none"> (a) Diaphragm (b) Ribs (c) Cartilaginous ring (d) Muscles 	1															
29	<p>The process of transpiration in plants helps in</p> <ul style="list-style-type: none"> (a) opening of stomata (b) absorption of CO_2 from atmosphere (c) upward conduction of water and minerals (d) absorption of O_2 from atmosphere 	1															
30	<p>The enzymes pepsin and trypsin are secreted respectively by</p> <ul style="list-style-type: none"> a) Stomach and pancreas b) Salivary gland and stomach c) Liver and pancreas 	1															

	d) Liver and salivary gland	
31	Arteries and veins are connected by a network of extremely narrow tubes called: a) Sieve tubes b) Capillaries c) Vena cava d) Valves	1
32	Movement of the synthesized products from the leaves to the roots and other parts of a plant's body takes place through the phloem. This process is known as: a) Translocation b) Transpiration c) Transportation d) Excretion	1
33	Assertion: Blood and lymph both circulatory fluids. Reason: Blood flows in both directions whereas lymph flows in one direction.	1
34	Assertion: Alveoli contains an extensive network of blood capillaries. Reason: Alveoli is the site of gaseous exchange.	1
35	Assertion: Nephrons are excretory units of kidney. Reason: Nephrons have no role in secretion of urine.	1
	<p>The liver is a large, meaty organ that sits on the right side of the belly. Weighing about 3 pounds, the liver is reddish-brown in colour and feels rubbery to the touch. Normally you can't feel the liver, because it's protected by the rib cage.</p> <p>The liver has two large sections, called the right and the left lobes. The gallbladder sits under the liver, along with parts of the pancreas and intestines. The liver and these organs work together to digest, absorb, and process food.</p> <p>The liver's main job is to filter the blood coming from the digestive tract, before passing it to the rest of the body. The liver also detoxifies chemicals and metabolizes drugs. As it does so, the liver secretes bile that ends up back in the intestines. The liver also makes proteins important for blood clotting and other functions.</p>	
36	We cannot feel the liver because – a) The Liver is protected by the stomach in the front. b) The Liver is protected by Pancreas in the front. c) The Liver is protected by rib cage in the front d) The liver is protected by Gallbladder in the front.	1
37	Which organs collectively work in processing, digestion and absorption of food? a) oesophagus, liver, stomach, intestine b) oesophagus, liver, pancreas, intestine c) gallbladder, liver, stomach, intestine d) gallbladder, liver, pancreas, intestine	1

38	The main task of the liver is a) Filtration of blood coming from the digestive tract. b) Detoxification of chemicals c) Metabolization of drugs. d) Protection of the rib cage	1
39	Finally, the bile juice is released in – a) oesophagus b) small intestine c) large intestine d) stomach	1
40	Liver helps in blood clotting by (a) Detoxifying chemicals (B) Metabolizing drugs (c) Filtering of blood (d) Making an important protein	1

DEPARTMENT OF SCIENCE					
Class-X-2021-22					
MIDTERM ANSWER KEY					
SET I					
1	2	3	4	5	6
c	b	b	a	d	b
7	8	9	10	11	12
b	d	a	b	c	d
13	14	15	16	17	18
b	b	b	d	a	c
19	20	21	22	23	24
a	a	a	a	a	b
25	26	27	28	29	30
a	b	c	c	c	a
31	32	33	34	35	36
b	a	b	a	c	c
37	38	39	40		
d	a	b	d		

CHECKED BY : HOD - SCIENCE