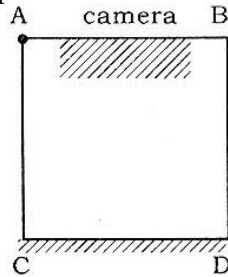


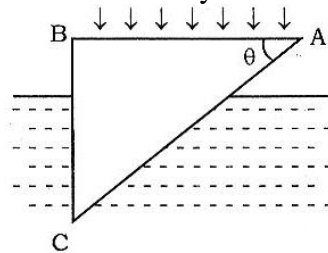
## Sample Paper (For XI<sup>th</sup> Non-Medical Entrance)

### Physics :

1. A cubical room ABCD has a mirrored planar wall CD. Each side of the room is 3 m. We place a camera at the mid-point of the wall AB. At what distances should the camera be focused to photograph an object placed at A?



- (a) 1.5 m (b) 3 m  
 (c) 6 m (d) More than 6 m
2. In which of the following cases do we get very strong reflected rays and very weak refracted rays?  
 (a) Light passing from air to glass (b) Light passing from water to glass  
 (c) Light passing from glass to diamond (d) Light passing from water to air
3. A glass prism of  $n = 1.5$  is immersed in water of  $n = \frac{4}{3}$  as shown in this figure. A ray of light incident normally on face AB is totally reflected at the face AC if  $\sin \theta$  is:



- (a) less than or equal to  $\frac{2}{3}$  (b) greater than  $\frac{8}{9}$   
 (c) 0.8666 (d) between  $\frac{2}{4}$  &  $\frac{8}{9}$
4. An uncharged conductor A connected with the earth is brought in contact with another charged conductor B. Thereby:  
 (a) the charge will remain the same but potential decreases  
 (b) the charge will remain the same but potential increases  
 (c) the charge and potential of B will remain unchanged  
 (d) the charge and potential of B will change
5. Two bulbs of wattage of 40 W and 100 W are connected in series to a 200 V line. Then:  
 (a) the potential drop across both the bulbs is 200 V  
 (b) the potential drop across both the bulbs is same but not 200 V  
 (c) the potential drop across 100 watt bulb is more  
 (d) the potential drop across 40 watt bulb is more
6. Fusion reaction takes place at a high temperature because:  
 (a) atoms are ionised at high temperatures  
 (b) molecules break up at high temperatures  
 (c) nuclei break up at high temperatures  
 (d) kinetic energy is high enough to overcome the repulsion between the nuclei

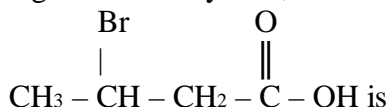
## Chemistry :

1. Consider the oxides of the third period:

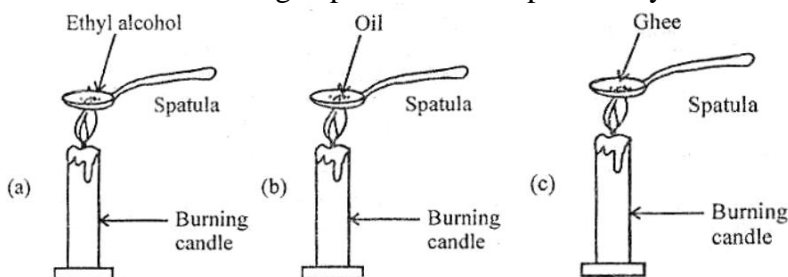
Na <sub>2</sub> O	MgO	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	P <sub>2</sub> O <sub>3</sub> , P <sub>2</sub> O <sub>5</sub>	SO <sub>2</sub> SO <sub>3</sub>	Cl <sub>2</sub> O <sub>7</sub>
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Which of the following will behave as strongest acid when dissolved in water?

- (a) Cl<sub>2</sub>O<sub>7</sub> (b) SO<sub>3</sub>  
(c) SiO<sub>2</sub> (d) P<sub>2</sub>O<sub>3</sub>
2. According to IUPAC system, the correct name of the organic compound



- (a) 2-Bromobutanoic acid (b) 2-Bromobutyric acid  
(c) 3-Bromobutanoic acid (d) 3-Bromo-2-hydroxybutan-2-one
3. In a chemical reaction, A combines with B to form AB with C to form A<sub>2</sub>C. What would be obtained if B and C combine together?
- (a) B<sub>2</sub>C (b) BC  
(c) BC<sub>2</sub> (d) B<sub>3</sub>C
4. Observe the following experimental setup carefully.



Which set up will produce smoke?

- (a) Set up (a) (b) Set up (b)  
(c) Set up (c) (d) All the set up (a), (b) & (c)
5. Which one observations is correct according to effect of acids and bases on some indicators.

	Test sample	Red litmus	Blue litmus	Phenol-phthalein	Methyl orange
I	Dil. HCl	No effect	Turn red	No effect	Turn red
II	Dil H <sub>2</sub> SO <sub>4</sub>	Turn blue	No effect	Turn pink	Turn red
III	Ca(OH) <sub>2</sub>	No effect	Turn red	Turn pink	Turn red
IV	Mg(OH) <sub>2</sub>	Turn blue	Turn red	No effect	No effect

- (a) I observation is correct (b) II observation is correct  
(c) III observation is correct (d) IV observation is correct.
6. Metals are refined by using different methods. Which of the following metals are refined by electrolytic refining?
- (i) Au (ii) Cu (iii) Na (iv) K  
(a) (i) and (ii) (b) (i) and (iii) (c) (ii) and (iii) (d) (iii) and (iv)

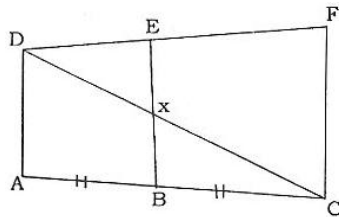


**Mathematics :**

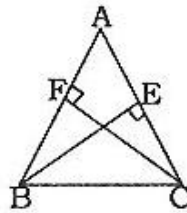
1. If  $f(x) = x^2 + 5x + p$  and  $g(x) = x^2 + 3x + q$  have a common factor, then  $(p - q)^2 =$   
 (a)  $2(5p - 3q)$  (b)  $2(3p - 5q)$  (c)  $3p - 5q$  (d)  $5p - 3q$
2. If the roots of  $\frac{1}{x} + \frac{1}{a} = \frac{1}{x} + \frac{1}{b} = \frac{1}{x} + \frac{1}{c}$  are equal in magnitude but opposite in sign, then the product of the roots is:

- (a)  $\frac{a^2 b^2}{2}$  (b)  $\frac{a^2 b^2}{4}$  (c)  $\frac{a b}{2}$  (d)  $\frac{a^2 b^2}{2}$

3. If  $a, b$  and  $c$  are in G.P. with  $1 < a < b < c$  and  $n > 1$  is an integer, then  $\log_a n, \log_b n, \log_c n$  form a sequence \_\_\_\_\_  
 (a) which is a G.P.  
 (b) which is an A.P.  
 (c) in which the reciprocals of the terms form an A.P.  
 (d) none of these
4. In the figure  $\overline{AD} \parallel \overline{BE} \parallel \overline{CF}$  and  $B$  is the midpoint of  $\overline{AC}$ .  $\overline{CD}$  intersects  $\overline{BE}$  at  $x$ . Then  $AD + CF$



- (a)  $\frac{1}{2}BE$  (b)  $2BE$  (c)  $\frac{1}{2}AC$  (d)  $\frac{1}{2}DF$
5. The coordinates of the point  $C$  dividing the join of points  $A(2, 6)$  and  $B(5, 1)$  in the ratio  $2 : 3$  is \_\_\_\_\_  
 (a)  $(\frac{16}{5}, \frac{16}{5})$  (b)  $(\frac{16}{5}, \frac{4}{5})$  (c)  $(\frac{16}{5}, \frac{4}{5})$  (d) none
6. The angle of elevation of top of a vertical tower from a point  $P$  on the ground is  $60^\circ$ . At a point  $Q, 40$  m vertically above  $P$ , the angle of elevation is  $45^\circ$ . Find the height of tower.  
 (a)  $\frac{40\sqrt{3}}{\sqrt{3}-1}$  (b)  $\frac{40\sqrt{3}}{\sqrt{3}+1}$  (c)  $\frac{20\sqrt{3}}{\sqrt{3}-1}$  (d)  $\frac{20\sqrt{3}}{\sqrt{3}+1}$
7. In  $\triangle ABC$ ,  $BE \perp AC$  and  $CF \perp AB$  then  $BC^2 =$



- (a)  $(AB \times BF) + (AC \times CE)$  (b)  $(AB \times AF) + (AC \times AE)$   
 (c)  $(AB \times CF) + (AC \times BE)$  (d)  $AB + BC + AC$
8. A wire bent in the form of a circle of radius  $42$  cm is cut and again bent in the form of a square. The ratio of the regions enclosed by the circle and the square in the two cases is given by  
 (a)  $11 : 12$  (b)  $21 : 33$  (c)  $22 : 33$  (d)  $14 : 11$

## Answers Key

### Physics

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>(d)</b>	<b>(d)</b>	<b>(b)</b>	<b>(d)</b>	<b>(d)</b>	<b>(d)</b>

### Chemistry

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
<b>(a)</b>	<b>(c)</b>	<b>(a)</b>	<b>(b)</b>	<b>(a)</b>	<b>(a)</b>

### Mathematics

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>(b)</b>	<b>(a)</b>	<b>(c)</b>	<b>(b)</b>	<b>(b)</b>	<b>(a)</b>	<b>(a)</b>	<b>(d)</b>