



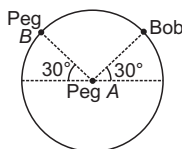
6. In the reaction,  

$$4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{l})$$
when 1 mole of ammonia and 1 mole of  $\text{O}_2$  are made to react to completion

- (A) 1.0 mole of  $\text{H}_2\text{O}$  is produced  
 (B) 2.0 moles of  $\text{NO}$  will be produced  
 (C) All the oxygen will be consumed  
 (D) All the ammonia will be consumed.

### ACHIEVERS SECTION

7. A bob is attached to one end of a string and other end of which is fixed at peg A. The bob is taken to a position where string makes an angle of  $30^\circ$  with the horizontal. On the circular path of the bob in vertical plane there is peg B at a symmetrical position with respect to the position of bob as shown in the figure. If  $v_c$  and  $v_a$  be the minimum speeds in clockwise and anticlockwise directions respectively, given to bob in order to hit the peg B, then ratio  $v_c : v_a$  is equal to

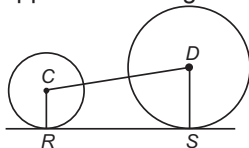


- (A) 1 : 1  
 (B)  $1 : \sqrt{2}$   
 (C) 1 : 2  
 (D) 1 : 4

8. A natural gas was containing mixture of methane and ethane only. On complete combustion of 10 litres of gas at STP, the heat evolved was 474.6 kJ. Assuming  $\Delta H_{\text{comb}} \text{CH}_4(\text{g}) = -894 \text{ kJ/mol}$  and  $\Delta H_{\text{comb}} \text{C}_2\text{H}_6(\text{g}) = -1500 \text{ kJ/mol}$ , the percentage of  $\text{CH}_4$  and  $\text{C}_2\text{H}_6$  will be respectively  
 (A) 30%, 70%  
 (B) 22%, 78%  
 (C) 72%, 28%  
 (D) 70%, 30%.

### MATHEMATICS

9. In the diagram, RS is common tangent to the two circles with centres C and D. The circle with centre C has a radius of 4 cm and the circle with centre D has a radius of 7 cm. Given that  $CD = 15 \text{ cm}$ , calculate the approximate length of RS.



- (A) 15.85 cm  
 (B) 13.70 cm  
 (C) 14.70 cm  
 (D) 15.30 cm

10. The value of  $\cos \frac{\pi}{15} \cos \frac{2\pi}{15} \cos \frac{3\pi}{15} \cos \frac{4\pi}{15} \cos \frac{5\pi}{15} \cos \frac{6\pi}{15} \cos \frac{7\pi}{15}$  is  
 (A)  $\frac{1}{164}$   
 (B)  $\frac{1}{138}$   
 (C)  $\frac{1}{60}$   
 (D)  $\frac{1}{128}$

### BIOLOGY

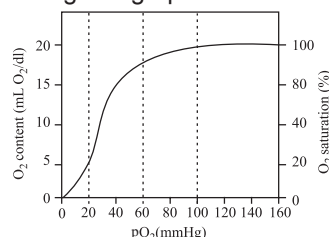
9. Read the given statements and select the correct option.

**Statement 1 :** Chloroplasts and mitochondria are semi-autonomous bodies.

**Statement 2 :** Chloroplasts and mitochondria have their own DNA and protein synthesizing machinery.

- (A) Both statements 1 and 2 are correct and statement 2 is the correct explanation of statement 1.  
 (B) Both statements 1 and 2 are correct but statement 2 is not the correct explanation of statement 1.  
 (C) Statement 1 is correct and statement 2 is incorrect.  
 (D) Both statements 1 and 2 are incorrect.

10. Refer to the given graph.



Under normal conditions, how much oxygen is transported to the tissues by blood on passing from lungs to tissues?

- (A) 15 mL of  $\text{O}_2$ /100 mL of blood  
 (B) 10 mL of  $\text{O}_2$ /100 mL of blood  
 (C) 5 mL of  $\text{O}_2$ /100 mL of blood  
 (D) 20 mL of  $\text{O}_2$ /100 mL of blood

### ANSWERS

(PHYSICS AND CHEMISTRY) 1. (D) 2. (B) 3. (B) 4. (B) 5. (C) 6. (C) 7. (C) 8. (C)

(MATHEMATICS) 9. (C) 10. (D)

(BIOLOGY) 9. (A) 10. (C)