

## Solution of the day/Sep-3, 2018

### 6<sup>th</sup> Class

➤ **Mathematics:**

Sum of the terms of the ratio = ( 4 + 3 ) = 7.

∴ First part = Rs.  $\left(455 \times \frac{4}{7}\right)$  = Rs.260    Second part = Rs.  $\left(455 \times \frac{3}{7}\right)$  = Rs.195

➤ **Physics:** Ans: (C)

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (D)

### 7<sup>th</sup> Class

➤ **Mathematics:**

$$\begin{array}{r} \text{Sol:} \quad 7q + 10p - 3r \\ \quad - 8q + 3p + 5r \\ \quad (+) \quad (-) \quad (-) \\ \hline \quad 15q + 7p - 8r \end{array}$$

➤ **Physics:** Ans: (A,B)

➤ **Chemistry:** Ans: (D)

➤ **Biology:** Ans: (D)

### 8<sup>th</sup> class

➤ **Mathematics:**

$$\begin{aligned} \text{➤ Sol:} \quad & \frac{\sec^2 \theta - \operatorname{cosec}^2 \theta}{\sec^2 \theta + \operatorname{cosec}^2 \theta} = \frac{(1 + \tan^2 \theta) - (1 + \cot^2 \theta)}{(1 + \tan^2 \theta) + (1 + \cot^2 \theta)} = \frac{\tan^2 \theta - \cot^2 \theta}{2 + \tan^2 \theta + \cot^2 \theta} \\ & = \frac{(\sqrt{5})^2 - \left(\frac{1}{\sqrt{5}}\right)^2}{2 + (\sqrt{5})^2 + \left(\frac{1}{\sqrt{5}}\right)^2} = \frac{25 - 1}{10 + 25 + 1} = \frac{24}{36} = \frac{2}{3} \end{aligned}$$

➤ **Physics:**

Sol: Length of the minute hand of the clock = 14 cm

During a half an hour duration, the tip of the minute hand moves between two diametrically opposite positions. Thus, the distance moved by the tip of the minute hand is equal to half the circumference of the circular path along which the tip moves =  $\frac{1}{2}(2\pi r)$  where 'r' is the length of the minute hand.

$$\therefore \text{Distance} = \frac{1}{2} \times 2 \times \frac{22}{7} \times 14 \text{ cm} = 44 \text{ cm}.$$

$$\text{Speed of the minute hand} = \frac{\text{Distance}}{\text{time}} = \frac{44 \text{ cm}}{1800 \text{ s}} = \frac{11}{450} \text{ cms}^{-1}$$

$$\text{Velocity of the minute hand} = \frac{\text{Displacement}}{\text{time}} = \frac{28 \text{ cm}}{1800 \text{ s}} = \frac{7}{450} \text{ cms}^{-1}$$

➤ **Chemistry:** Ans: (A)

➤ **Biology:** Ans: (A)

### 9<sup>th</sup> Class

➤ **Mathematics:**

$$\text{Sol: (C) } \theta \in IV; \cos \theta = \frac{5}{13}; \text{G.E} = \frac{13 \cdot (12/13) + 5(-12/5)}{12(-5/12) - 5(13/5)} = \frac{4}{3}$$

➤ **Physics:**

Sol: Here, we find that the acceleration is not constant, and we cannot use the equation  $v = u + at$ .

$\therefore$  Change in velocity = area under the a-t curve.

$$= \frac{1}{2} \times 5 \times 10 = 25 \text{ ms}^{-1}$$

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (B)

## 10<sup>th</sup> class

### ➤ Mathematics:

Sol: We have,  $\tan \theta = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{BC}{AB} \Rightarrow \frac{BC}{1} = \frac{AB}{\sqrt{3}} = k$

$$\Rightarrow BC = k, AB = \sqrt{3}k$$

By Pythagoras theorem

$$AC^2 = (\sqrt{3}k)^2 + k^2 = 3k^2 + k^2 = 4k^2 \Rightarrow AC = 2k$$

$$\sin \theta = \frac{BC}{AC} = \frac{k}{2k} = \frac{1}{2}, \cos \theta = \frac{AB}{AC} = \frac{\sqrt{3}k}{2k} = \frac{\sqrt{3}}{2}$$

$$\text{Here } 7\sin^2 \theta + 3\cos^2 \theta = 7\left(\frac{1}{2}\right)^2 + 3\left(\frac{\sqrt{3}}{2}\right)^2 = \frac{7}{4} + \frac{9}{4} = \frac{16}{4} = 4$$

➤ **Physics:** Ans: (B)

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (A)

➤ **Reasoning :** Ans: (A)