

## Solution of the day/Sep-28, 2018

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

- **Mathematics:** Ans:  $-4x^2 + 3mn - 2m^2$
- **Physics:** Ans: (A)
- **Chemistry:** Ans: True
- **Biology:** Ans: (A)

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

- **Mathematics:** Ans:  $-y^2 + yz + z^2$
- **Physics:** Ans: (B)
- **Chemistry:** Ans: (D)
- **Biology:** Ans: (A)

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

- **Mathematics:**

Sol: LHS =  $(m^2 - n^2)$

$$\begin{aligned} &= (\tan\theta + \sin\theta)^2 - (\tan\theta - \sin\theta)^2 \\ &= (\tan^2\theta + \sin^2\theta + 2\tan\theta\sin\theta) - (\tan^2\theta + \sin^2\theta - 2\tan\theta\sin\theta) \\ &= 4\tan\theta\sin\theta \quad [\because (a+b)^2 - (a-b)^2 = 4ab] \\ \text{RHS} &= 4\sqrt{mn} \\ &= 4\sqrt{(\tan\theta + \sin\theta)(\tan\theta - \sin\theta)} \\ &= 4\sqrt{(\tan^2\theta - \sin^2\theta)} = 4 \cdot \sqrt{\left(\frac{\sin^2\theta}{\cos^2\theta} - \sin^2\theta\right)} \\ &= 4\sqrt{\frac{\sin^2\theta - \sin^2\theta\cos^2\theta}{\cos^2\theta}} \\ &= 4\sqrt{\sin^2\theta\left(\frac{\sin^2\theta}{\cos^2\theta}\right)} \\ &= 4\sqrt{\sin^2\theta\tan^2\theta} \end{aligned}$$

➤ **Physics:** Ans: (D)

➤ **Chemistry:** Ans: (i)- c, (ii)- d, (iii)- a, (iv)- b

➤ **Biology:** Ans: (C)

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

➤ **Mathematics:**

$$\begin{aligned} \text{L.H.S} &= \cot \theta - \tan \theta = \frac{\cos \theta}{\sin \theta} - \frac{\sin \theta}{\cos \theta} = \frac{\cos^2 \theta - \sin^2 \theta}{\sin \theta \cos \theta} \left[ \because \cot \theta = \frac{\cos \theta}{\sin \theta}, \tan \theta = \frac{\sin \theta}{\cos \theta} \right] \\ & \left[ \because \sin^2 \theta = 1 - \cos^2 \theta \right] \\ &= \frac{\cos^2 \theta - (1 - \cos^2 \theta)}{\sin \theta \cos \theta} = \frac{\cos^2 \theta - 1 + \cos^2 \theta}{\sin \theta \cos \theta} = \frac{2 \cos^2 \theta - 1}{\sin \theta \cos \theta} = \text{R.H.S} \end{aligned}$$

➤ **Physics:** Ans: (B)

➤ **Chemistry:** Ans: (A)

➤ **Biology:** Ans: (A)

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

➤ **Mathematics:**

$$\text{Sol: } \sin(A - B) = \sin A \cos B - \cos A \sin B$$

On replacing A by 45° and B by 30°, we get

$$\sin(45^\circ - 30^\circ) = \sin 45^\circ \cos 30^\circ - \cos 45^\circ \sin 30^\circ$$

$$= \left( \frac{1}{\sqrt{2}} \right) \left( \frac{\sqrt{3}}{2} \right) - \left( \frac{1}{\sqrt{2}} \right) \left( \frac{1}{2} \right) = \frac{\sqrt{3}}{2\sqrt{2}} - \frac{1}{2\sqrt{2}} = \frac{\sqrt{3} - 1}{2\sqrt{2}}$$

➤ **Physics:** Ans: (D)

➤ **Chemistry:** Ans: (C)

➤ **Biology:** Ans: (A)

➤ **Reasoning :**

Sol: (C)