

Solution of the day Aug 24, 2018

6th Class

➤ **Mathematics:**

Sol:

Let the number of 50 p, 25 p and 10 p coins be $5x$, $9x$ and $4x$ respectively.

$$\text{Then, } \frac{5x}{2} + \frac{9x}{4} + \frac{4x}{10} = 206$$

$$\Leftrightarrow 50x + 45x + 8x = 4120 \Leftrightarrow 103x = 4120 \Leftrightarrow x = 40$$

\therefore Number of 50 p coins = $(5 \times 40) = 200$; number of 25 p coins = $(9 \times 40) = 360$;

Number of 10 p coins = $(4 \times 40) = 160$

➤ **Physics:** Ans: (C)

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

➤ **Biology:** Ans: (D)

7th Class

➤ **Mathematics:** Ans: (C)

➤ **Physics:**

Sol:

(i) What is 1 M.S.D. for given height gauge?

$$\text{The formula for L.C. of an apparatus } 1 \text{ M.S.D.} - 1 \text{ V.S.D.} = \frac{1 \text{ M.S.D.}}{N}$$

What is the value of L.C. of given instrument?

Then what is the number of divisions present on vernier scale?

$$\text{Then the value of } 1 \text{ V.S.D.} = 1 \text{ M.S.D.} - \text{L.C.}$$

If the value of N is 50, and 1 M.S.D. = 1 mm, then what is the value of L.C.?

(ii) Minimum length of the vernier scale = 9.9 cm

(iii) Least count = 0.02 mm

➤ **Chemistry:** Ans: (D)

➤ **Biology:** Ans: (A)

8th class

➤ **Mathematics:** Ans: (D)

➤ **Physics:**

Sol: (i) $V_B = 20\hat{i} \text{ m/s}$; $V_A = 5\hat{i} \text{ m/s}$; $V_B - V_A = 15\hat{i} \text{ m/s}$

(ii) $V_B = 20\hat{i} \text{ m/s}$; $V_A = 5\hat{i} \text{ m/s}$; $V_{AB} = V_A - V_B = -15\hat{i} \text{ m/s}$

Note : $V_{BA} = -V_{AB}$

➤ **Chemistry:** Ans: (B)

➤ **Biology:** Ans: (D)

9th Class

➤ **Mathematics:**

Sol: $\cot \theta + \operatorname{cosec} \theta = 5$

$$\frac{\cos \theta}{\sin \theta} + \frac{1}{\sin \theta} = 5$$

Cross multiplying

$$\cos \theta + 1 = 5 \sin \theta$$

$$\cos \theta + 1 = 5\sqrt{(1 - \cos^2 \theta)}$$

Squaring both sides

$$\cos^2 \theta + 1 + 2 \cos \theta = 25(1 - \cos^2 \theta)$$

$$\cos^2 \theta + 1 + 2 \cos \theta = 25 - 25 \cos^2 \theta$$

$$26 \cos^2 \theta + 2 \cos \theta - 24 = 0$$

$$26 \cos^2 + 26 \cos \theta - 24 \cos \theta - 24 = 0$$

$$(\cos \theta + 1)(26 \cos \theta - 24) = 0$$

Now either $\cos \theta + 1 = 0$, then $\cos \theta = -1$

$$26 \cos \theta - 24 = 0, \text{ then } \cos \theta = 12/13$$

➤ **Physics:**

Sol: i) $\hat{A} = \frac{3\hat{i} + 2\hat{j} - 3\hat{k}}{\sqrt{22}}$, $|\hat{A}| = \sqrt{22}$

ii) $\hat{A} = \frac{2\hat{i} + 6\hat{j} - \hat{k}}{\sqrt{41}}$, $|\hat{A}| = \sqrt{41}$

iii) $\hat{A} = \frac{\hat{i} + \hat{k}}{\sqrt{2}}$, $|\hat{A}| = \sqrt{2}$

iv) $\hat{A} = \frac{3\hat{i} + \hat{j}}{\sqrt{10}}$, $|\hat{A}| = \sqrt{10}$

v) $\hat{A} = \frac{2\hat{i} - 6\hat{k}}{\sqrt{40}}$, $|\hat{A}| = \sqrt{40}$

➤ **Chemistry:** (A)

➤ **Biology:** Ans: (C)

10th class

➤ **Mathematics:**

Hint: Divide the given equation by $\sin^2 x$ both sides

➤ **Physics:**

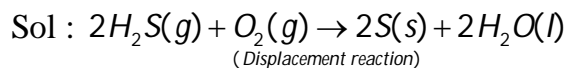
Sol: Heat given by 1 kg ice = $1 \times \frac{1}{2} \times 10 = 5$ kcal

$$5 + 1 \times 80 + 1 \times T = 1 \times (100 - T)$$

$$85 = 100 - 2T \Rightarrow 2T = 15$$

$$T = 7.5 = 7.5^\circ \text{C, water}$$

➤ **Chemistry:**



➤ **Biology:** Ans: (C)

➤ **Reasoning :** Ans: (B)