

## Solution of the day/ Aug 27, 2018

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

#### ➤ Mathematics:

Sol :

$$X, 5, 10, y \text{ are in continued proportion} \Rightarrow \frac{x}{5} = \frac{5}{10} = \frac{10}{y}$$

$$\text{Now, } \frac{x}{5} = \frac{5}{10} \Rightarrow x = \frac{25}{10} = \frac{5}{2}$$

$$\text{Also, } \frac{5}{10} = \frac{10}{y} \Rightarrow 5y = 100 \Rightarrow y = \frac{100}{5} = 20$$

#### ➤ Physics: Ans: (B)

#### ➤ Chemistry: i-b, ii-c, iii-d, iv-a.

#### ➤ Biology: Ans: (D) Orchid is a producer as it can synthesize its own food. Moths are herbivores, as they directly feed on orchids and mice feed on moths. Owl is a top consumer as it feeds on mice. Hence, the correct order of the food chain will be as follows:-

Orchid → Moths → Mice → Owl

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

#### ➤ Mathematics:

$$\text{Sol: (B) } a^{1/x} = k \quad b^{1/y} = k \quad c^{1/z} = k$$

$$a = k^x \quad b = k^y \quad c = k^z$$

$$\text{We have, } b^2 = ac$$

$$(k^y)^2 = k^x \times k^z$$

$$k^{2y} = k^x \times k^z$$

$$\Rightarrow 2y = x + z \quad \Rightarrow \frac{x+z}{2y} = 1$$

➤ **Physics:**

Sol: (i) New volume =  $(1.21 \times 1.1b \times 1.05h)$

(ii)  $386\text{cm}^3$

➤ **Chemistry:** Ans: (C)

➤ **Biology:** Ans: (A)

**8<sup>th</sup> class**

➤ **Mathematics:** Ans: (D)

➤ **Physics:**

Sol:  $S_A = ut - \frac{1}{2}gt^2 = 5t - \frac{1}{2} \times 10 \times t^2 = 5 \times 1 - 5 \times 1^2 = 5 - 5 = 0$

$$S_B = ut - \frac{1}{2}gt^2 = 10 \times 1 - \frac{1}{2} \times 10 \times 1^2 = 10 - 5 = 5$$

$$\therefore S_B - S_A = \text{separation} = 5\text{m.}$$

➤ **Chemistry:** Ans: (D)

➤ **Biology:** Ans: (A)

**9<sup>th</sup> Class**

➤ **Mathematics:**

Sol:  $\tan \theta + \cot \theta = 2$

$$\frac{\sin \theta}{\cos \theta} + \frac{\cos \theta}{\sin \theta} = 2 \quad (\text{or}) \quad \frac{\sin^2 \theta + \cos^2 \theta}{\sin \theta \cos \theta} = 2$$

Cross multiply

$$1 = 2 \sin \theta \cos \theta$$

$$1 = 2 \sin \theta \sqrt{(1 - \sin^2 \theta)}$$

Squaring both sides

$$1 = 4 \sin^2 \theta - 4 \sin^4 \theta$$

$$4 \sin^4 \theta - 4 \sin^2 \theta + 1 = 0$$

$$(2 \sin^2 \theta - 1)^2 = 0, \text{ or } 2 \sin^2 \theta - 1 = 0$$

$$\sin^2 \theta = \frac{1}{2}, \text{ or } \sin \theta = \pm \frac{1}{\sqrt{2}}$$

➤ **Physics:**

Sol:  $\vec{F} = 50 \cos 30^\circ \hat{i} + 50 \sin 30^\circ \hat{j} = 25\sqrt{3} \hat{i} + 25 \hat{j}$

➤ **Chemistry:** Ans: (D)

➤ **Biology:** Ans: (C)

**10<sup>th</sup> class**

➤ **Mathematics:**

➤ **Hint :**  $A + C = 180^\circ$

$B + D = 180^\circ$

➤ **Physics:** Ans: 10.42g

➤ **Chemistry:**

Sol: Aluminum is quite reactive metal than iron. Therefore, aluminum easily forms a passive layer of aluminum oxide with air which is not reactive. But in case of iron, it does not form such layer. Therefore, iron corrodes but aluminum does not.

➤ **Biology:** Ans: (A)

➤ **Reasoning :** Ans: (A)