

Mathematics Mega Quiz RRB NTPC 05.01.2020 (Solution)

S1. Ans.(a)

Sol.

$$\text{Selling price} = 4950 \times 0.8 \times 0.85 = \text{Rs. } 3366$$

S2. Ans.(b)

Sol.

$$\frac{15}{100} \times x = 3 \times \frac{10}{100} \times y$$

$$\frac{x}{y} = \frac{2}{1}$$

S3. Ans.(c)

Sol.

$$\text{Speed of sound} = \frac{6.64 \times 1000}{20} \text{ m/sec} = 332 \text{ m/sec}$$

S4. Ans.(c)

Sol.

$$\tan(\theta + 15) = \sqrt{3} = \tan 60^\circ$$

$$\theta + 15 = 60$$

$$\theta = 45^\circ$$

S5. Ans.(c)

Sol.

ATQ.

Largest No. $\rightarrow 86520$

& least No. $\rightarrow 20568$

$$\text{so, req. difference} = (86520 - 20568) = 65952$$

S6. Ans.(b)

Sol.

ATQ

$$20W \times 16 = 16M \times 15$$

$$\frac{\text{Man}}{\text{Woman}} = \frac{4}{3}$$

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S7. Ans.(a)

Sol.

let first no. = x

another no. = 2x

so, $x \times 2x = 2048$

$x = 32$

so, smaller no. = 32

S8. Ans.(a)

Sol.

Diagonal of a cuboid = $\sqrt{\ell^2 + b^2 + h^2} = \sqrt{5^2 + 4^2 + 3^2} = 5\sqrt{2}$ cm

S9. Ans.(c)

$$\frac{p^2 + q^2}{p \cdot q} = 7 \Rightarrow \frac{p^2}{pq} + \frac{q^2}{pq} = 7 \Rightarrow \frac{p}{q} + \frac{q}{p} = 7$$

Sol.

S10. Ans.(a)

Sol. In acute angle case, its orthocentre lies inside the triangle

S11. Ans.(d)

Sol.

$$\text{Area} = \frac{1}{2} \times (20 + 16) \times 10 = 180 \text{ m}^2$$

S12. Ans.(b)

Sol.

Equivalent single discount

$$= 100 - 100 \times \frac{85}{100} \times \frac{80}{100} \times \frac{75}{100} = 100 - 51 = 49\%$$

S13. Ans.(b)

Sol.

$$\frac{d^{s+t}}{d^s} \div d^t = \frac{d^t}{d^t} = 1$$

S14. Ans.(d)

Sol.

$50^\circ + 60^\circ + 70^\circ = 180^\circ$ which is required to form a triangle.

S15. Ans.(b)

Sol.

$$\because \sin A = \cos B = \sin (90 - B)$$

$$\Rightarrow A + B = 90^\circ$$

$$\Rightarrow A + B + C = 180^\circ$$

$$\Rightarrow C = 90^\circ \text{ \& \; } \cos 90^\circ = 0$$

S16. Ans.(c)

Sol.

$$\frac{4}{3}\pi \times (5)^3 = \frac{1}{3}\pi \times 5^2 \times h$$
$$h = 20 \text{ cm.}$$

S17. Ans.(b)

Sol.

$$\because x + \frac{1}{x} = 2$$
$$\Rightarrow x = 1$$

S18. Ans.(d)

Sol.

$$l \times b = 60 \quad \dots(i)$$

$$l + b = 17 \quad \dots(ii)$$

from (i) & (ii)

$$l = 12, b = 5$$

diagonal = 13 cm (since, 12, 5 and 13 forms a triplet)

S19. Ans.(d)

Sol.

$$S = \frac{50+L}{14} \quad \dots(i)$$

$$S = \frac{L}{10} \quad \dots(ii)$$

from (i) & (ii)

$$L = 125 \text{ \& } S = 12.5 \text{ m/s} = 45 \text{ km/hr.}$$

S20. Ans.(c)

Sol. The angle formed in a semicircle is always of 90°

S21. Ans.(a)

Sol.

$$a + b = 5$$

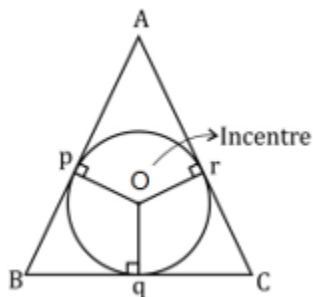
$$a - b = 3$$

$$\therefore a = 4, b = 1$$

$$\text{Then, } a^2 + b^2 \Rightarrow 4^2 + 1^2 = 17$$

S22. Ans.(b)

Sol.



S23. Ans.(c)

Sol.

$$\begin{aligned} & \operatorname{cosec}^2 60^\circ + \sec^2 60^\circ - \cot^2 60^\circ + \tan^2 30^\circ \\ &= \left(\frac{2}{\sqrt{3}}\right)^2 + (2)^2 - \left(\frac{1}{\sqrt{3}}\right)^2 + \left(\frac{1}{\sqrt{3}}\right)^2 \\ &= \frac{4}{3} + 4 - \frac{1}{3} + \frac{1}{3} \\ &= \frac{16}{3} = 5\frac{1}{3} \end{aligned}$$

S24. Ans.(c)

Sol.

ATQ

$$4\angle A = 3\angle B = 12\angle C$$

$$\frac{\angle A}{\angle B} = \frac{3}{4} \text{ and } \frac{\angle B}{\angle C} = \frac{12}{3} = \frac{4}{1}$$

$$\therefore \angle A : \angle B : \angle C = 3 : 4 : 1$$

$$\text{So, } \angle A = \frac{180}{8} \times 3 \Rightarrow 67.5^\circ$$

S25. Ans.(b)

Sol.

$$\text{Total height of 30 students} = 160 \times 30 = 4800$$

$$\text{Total height of 20 students} = 20 \times 165 = 3300$$

$$\text{Req. average} = \frac{8100}{50} = 162 \text{ cm}$$

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