Q1. In a ΔABC, a circle is inscribed. It touches the sides AB, BC, and AC at the points P, Q and R respectively. If AP = 2cm, BQ = 5cm and CR = 7cm. Find the area of triangle

(a) $12\sqrt{3}\text{cm}^2$

(b) $14\sqrt{5}\text{ cm}^2$

(c) 13 cm^2

(d) $16\sqrt{7}\text{ cm}^2$

Q2. A train covers a distance of 576 km at a certain speed. If the speed is decreased by 24 km/hr, it wil take 2 hours more to cover the same distance. Find $33\frac{1}{3}\%$ of original speed.

(a) 32 km/hr

(b) 24 km/hr

(c) 38 km/hr

(d) 28 km/hr

Q3. Four years ago, the ratio of ages of A and B was 3 : 5. Ten years from now, the ratio of the ages of A and B will be 5 : 6. Find the sum of present ages?
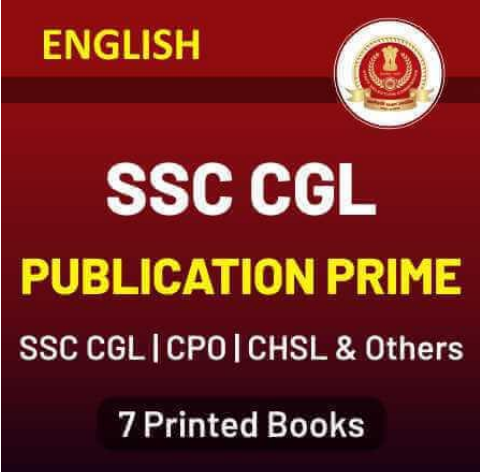
(a) 32 years

(b) 24 years

(c) 26 years

(d) 22 years

Q4. For an article, the profit is 220% of the cost price. If the cost price increases by 25% but selling price remains same. Then original profit percentage (approx.)?

(a) 22%

(b) 26%

(c) 29%

(d) 31%

Q5. If a nine digit number 985x3678y is divisible by 72, find the value of x + y

(a) 4

(b) 8

(c) –2

(d) 6

Q6. The ratio of efficiencies of A, B, C is 4 : 6 : 7. Working together, they can complete working in 39 days A and C together can complete $88\frac{2}{3}\%$ of work in how many days? (approx.)

(a) 53.4 days
(b) 55.7 days
(c) 49 days
(d) 61.8 days

Q7. If $x + y + z = 6$, $x^2 + y^2 + z^2 = 30$, $xyz = -10$ Find the value of $x^3 + y^3 + z^3$

(a) 115
(b) 124
(c) 132
(d) 128

Q8. The Sides of a triangle are 119cm, 120cm, 169cm. Find the circum radius of the triangle?

(a) 72.8 cm
(b) 64.3 cm
(c) 60 cm
(d) 84.5 cm

Q9. If $A = \left(\sqrt{71} - \sqrt{69}\right) / \left(\sqrt{71} + \sqrt{69}\right)$, then what is the value of $1/A$?

(a) $70 - \sqrt{71}$
(b) $70 + 3\sqrt{1633}$
(c) $140 + 2\sqrt{4899}$
(d) $70 + \sqrt{4899}$

Q10. If the radius of a cylinder is increased by 12% then by how much percent height of cylinder should decrease so volume remains unchanged?

(a) 15.17%
(b) 15.70%
(c) 20.28%
(d) 20.84%

Q11. Simplify, $6 \div \frac{1}{6}$ of $12 + 4 \times \left(\frac{1}{72} \text{ of } 144 \div 2\right)$ of 16

(a) 128
(b) 64
(c) 67
(d) 134

Q12. Find the compound interest on Rs 15625 if sum is compounded 8 monthly at 12% Rate of interest per annum for 2 years.

(a) 3600
(b) 3650
(c) 3949
(d) 4058

Q13. The successive discount of $16\frac{2}{3}\%$, $66\frac{2}{3}\%$ and 10% is equilent to a single discount of-

(a) 93.33%

(b) 87.66%

(c) 75%

(d) 72.33%

Q14. Pipes A and B can fill a tank in 9 hours and 12 hours and pipe C can empty the full tank in 18 hours All three pipes are opened together, but pipe A is closed after2 hours. In how many hours will the remaining part of the tank be filled?

(a) $5\frac{1}{5}$ hours

(b) 26 hours

(c) $6\frac{1}{4}$ hours

(d) 24 hours

Q15. From the top of a 30 m high building, the angle of elevation of the top of a tower is 30° and the angle of depression of the foot of the tower is θ, such that secθ = 5/4. What is the height of the tower ($\sqrt{3} = 1.73$)?

(a) 53.23

(b) 52.99

(c) 51.85

(d) 48.99

Q16. One side of a rhombus is 61 cm and one of its diagonals is 22 cm. What is the area of the rhombus?

(a) 1132 cm²

(b) 1320 cm²

(c) 1480 cm²

(d) 660 cm²

Q17. If $2\cos^2\theta + 3\sin\theta = 3$, if 0< θ<90 Find sec θ + tan θ?

(a) $\sqrt{3} + \frac{1}{\sqrt{3}}$

(b) $\sqrt{3} - \frac{1}{\sqrt{3}}$

(c) $\sqrt{3}$

(d) $\frac{1}{\sqrt{3}}$

Q18. $5\frac{5}{6} + \left[2\frac{2}{3} - \left\{3\frac{3}{4}\left(3\frac{4}{5} \div 9\frac{1}{2}\right)\right\}\right]$ is equals to-

(a) 7

(b) $\frac{44}{7}$

(c) $\frac{43}{6}$

(d) $\frac{22}{3}$

Q19. If cot (2α + β) cot (3α –β) = 1 then what is the value of α

(a) 36°

(b) 18°

(c) 45°

(d) can't be determine

Q20. What is the mean proportional of 135 and 540?

(a) 360

(b) 180

(c) 270

(d) 145

Q21. PA and PB are two tangents from a point P outside a circle with centre O. If A and B are points on the circle such that ∠APB = 70°, then ∠OAB is equal to —

(a) 25°

(b) 35°

(c) 70°

(d) 110°

Q22. A number which, when increased by 123% becomes 3345. The number is—

(a) 1245

(b) 1575

(c) 1500

(d) 1775

Q23. The average of all prime numbers between 30 to 60 is—

(a) 45.53

(b) 41.42

(c) 44.43

(d) 44.90

Q24. A seller marks the products 32% above the cost price and allow a discount of 13%. If the cost price is Rs. 3267800, then the selling price is—

(a) 385431.23

(b) 3752741.52

(c) 3852741.74

(d) 335431.23

Q25. Which of the following statement is true?

(a) LCM × HCF = sum of the numbers

(b) LCM of co-prime number = product of numbers

(c) HCF of two numbers is the smallest common divisor of both numbers

(d) Two prime numbers are co-prime numbers if their LCM is 1.