Q1. A retailer buys 40 pens at the marked price of 36 pens from a wholesaler. If he sells these pens giving a discount of 1%, what is the profit percent?
(a) 9%
(b) 10%
(c) $10\frac{1}{9}$ %
(d) 11%

Q2. PQ is chord of length 8 cm of a circle of radius 5 cm. The tangents at P and Q intersect at a point T. Find the length TP.
(a) 20/3 cm
(b) 20 cm
(c) 3 cm
(d) 4 cm

Q3. The arithmetic mean of the scores of a group of students in a test was 52. The brightest 20% of them secured a mean score of 80 and the dullest 25% has a mean score of 31. The mean score of remaining 55% is (approx.).
(a) 45%
(b) 50%
(c) 51.4%
(d) 54.6%

Q4. A cricketer whose bowling average is 24.85, runs per wicket, takes 5 wickets for 52 runs and thereby decreases his average by 0.85. the number of wickets taken by him till the last match was
(a) 64
(b) 72
(c) 80
(d) 96

Q5. The height of a tower is h and the angle of elevation of the top of the tower is a. On moving a distance h/2 towards the tower, the angle of elevation become b. what is the value of (cot a – cot b)?
(a) 1/2
(b) 2/3
(c) 1
(d) 2

Q6. Four runners started running simultaneously from a point on a circular track. They took 200 s, 300 s, 360 s and 450 s to complete one round. After how much time do they meet at the starting point for the first time?
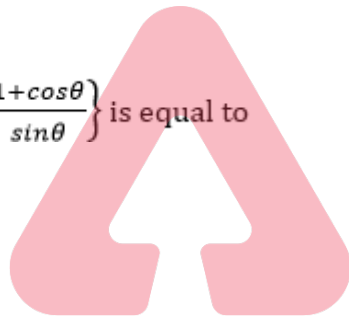
(a) 1800 s

(b) 3600 s

(c) 2400 s

(d) 4800 s

Q7. A field is 125 m long and 15 m wide. A tank 10m×7.5 m × 6 m was dug in it and the earth thus dug out was spread equally on the remaining field. The level of the field thus raised is equal to which one of the following?

(a) 15 cm

(b) 20 cm

(c) 25 cm

(d) 30 cm

Q8. $\left\{ \frac{sin\theta}{1+cos\theta} + \frac{1+cos\theta}{sin\theta} \right\}$ is equal to

(a) 2

(b) $\frac{2}{sin\theta}$

(c) $\frac{4}{sin\theta cos\theta}$

(d) None of these

Q9. A student was asked to divide a number by 6 and add 12 to the quotient. He, however, first added 12 to the number and there divided it by 6, getting 112 as the answer. The correct answer should have been

(a) 124

(b) 122

(c) 118

(d) 114

Q10. How many factors of 81000 are there having '0' as a unit digit.

(a) 45

(b) 12

(c) 42

(d) 30

Q11. Average height of a group of people is 'P' cms. Among them, average height of 13 people is 'q' cms and the average of height of the remaining group is 'r' cms. Find the number of people in the group? (p>r & q>r)

(a) $\dfrac{p(q-r)}{(p-r)}$

(b) $\dfrac{(q-r)}{(p-r)}$

(c) $\dfrac{p-r}{13(p-r)}$

(d) $\dfrac{13(q-r)}{(p-r)}$

Q12. PQRS is a cyclic quadrilateral such that PQ is the diameter of the circle circumscribing it and ∠PSR = 147°, then what is the measure of ∠QPR

(a) 33°

(b) 57°

(c) 133°

(d) 123°

Q13. From a point P outside the circle with centre O, two tangents PA and PB are drawn to meet the circle at A and B respectively. If ∠APB = 42°, then ∠OAB is equal to-

(a) 42°

(b) 21°

(c) 111°

(d) 69°

Q14. If $x + x^{-1} = 13$, then $x^2 + x^{-2}$ is equal to-

(a) 167

(b) 173

(c) 169

(d) 165

Q15.

$\dfrac{4.75\times4.75\times4.75-3.25\times3.25\times3.25}{47.5\times47.5+32.5\times32.5+47.5\times32.5}$ is equal to -

(a) 1.5

(b) 0.15

(c) 0.0015

(d) 0.015

Q16. If a train runs with the speed of $25\frac{km}{hr}$, it reaches its destination 390 minutes late. However, if its speed is 35 km/hr, it is late by only 150 minutes. Find the distance covered by the train-

(a) 340 km

(b) 345 km

(c) 350 km

(d) 375 km

Q17. Two pipes A and B can fill an empty tank in 4 hours and 5 hours respectively. After how much time. Pipe B should close so that tank filled in 3 hours?

(a) $1\frac{1}{2}$ hours

(b) $1\frac{1}{4}$ hours

(c) $1\frac{3}{4}$ hours

(d) $1\frac{4}{5}$ hours

Q18. if $\tan\theta + \cot\theta = \pi$, then $\sec^2\theta + \csc^2\theta = ?$

(a) π+2

(b) π-2

(c) π^2-2

(d) π^2

Q19. A sphere of radius 11 cm is melted and recast into small sphere of radius 3 cm each. How many sphere can be made?

(a) 47

(b) 48

(c) 49

(d) 50

Q20. The value of $\sin^2 30° \sin^2 45° + 2\tan^2 30° - \sec^2 60°$ is equal to-

(a) $\frac{-13}{12}$

(b) $\frac{-77}{24}$

(c) $\frac{-25}{12}$

(d) $\frac{-1}{12}$

Q21. The greatest of the numbers $\sqrt[2]{8},\ \sqrt[4]{13},\ \sqrt[5]{16},\ \sqrt[10]{41}$ is?

(a) $\sqrt[4]{13}$

(b) $\sqrt[5]{16}$

(c) $\sqrt[10]{41}$

(d) $\sqrt[2]{8}$

Q22. If $2^x = 3^y = 6^{-z}$ then $\left(\frac{1}{x} + \frac{1}{y} + \frac{1}{z}\right)$ is equal to?

(a) 0

(b) 1

(c) $\frac{3}{2}$

(d) $-\frac{1}{2}$

Q23. $2\sqrt[3]{40} - 4\sqrt[3]{320} + 3\sqrt[3]{625} - 3\sqrt[3]{5}$ is equal to?

(a) $-2\sqrt[3]{340}$

(b) 0

(c) $\sqrt[3]{340}$

(d) $\sqrt[3]{660}$
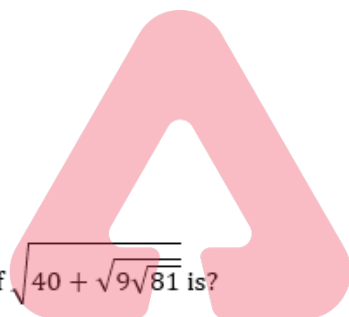
Q24. The value of $\sqrt{40 + \sqrt{9\sqrt{81}}}$ is?

(a) $\sqrt{111}$

(b) 9

(c) 7

(d) 11

Q25. If $\dfrac{(x-\sqrt{24})(\sqrt{75}+\sqrt{50})}{\sqrt{75}-\sqrt{50}} = 1$, then the value of x is?

(a) $\sqrt{5}$

(b) 5

(c) $2\sqrt{5}$

(d) $3\sqrt{5}$

Q26. Evaluate $\sqrt{20} + \sqrt{12} + \sqrt[3]{729} - \dfrac{4}{\sqrt{5}-\sqrt{3}} - \sqrt{81}$?

(a) $\sqrt{2}$

(b) $\sqrt{3}$

(c) 0

(d) $2\sqrt{5}$

Q27.

If a, b are rationals and $a\sqrt{2} + b\sqrt{3} = \sqrt{98} + \sqrt{108} - \sqrt{48} - \sqrt{72}$, then the values of a, b are respectively?

(a) 1, 2

(b) 1, 3

(c) 2, 1

(d) 2, 3

Q28. Let $\sqrt[3]{a} = \sqrt[3]{26} + \sqrt[3]{7} + \sqrt[3]{63}$ then?

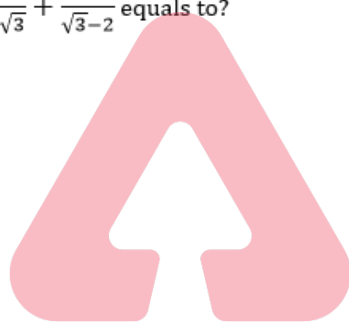(a) a < 729 but a > 216

(b) a < 216

(c) a > 729

(d) a = 729

Q29. $2 + \frac{6}{\sqrt{3}} + \frac{1}{2+\sqrt{3}} + \frac{1}{\sqrt{3}-2}$ equals to?

(a) $+(2\sqrt{3})$

(b) $-(2+\sqrt{3})$

(c) 1

(d) 2

Q30.

Find the value of $\sqrt{30 + \sqrt{30 + \sqrt{30 + \cdots}}}$?

(a) 5

(b) $3\sqrt{10}$

(c) 6

(d) 7