Quantitative Aptitude for RRB NTPC

Q1.

The numerical value of $1 + \frac{1}{\cot^2 63°} - \sec^2 27° + \frac{1}{\sin^2 63°} - \text{cosec}^2 27°$

(a) –1
(b) 0
(c) 1
(d) 2

Q2.

If $\sin \frac{\pi x}{2} = x^2 - 2x + 2$, then the value of x is:

(a) 0
(b) 1
(c) –1
(d) None of these

Q3.

If $\cos \pi x = x^2 - x + \frac{5}{4}$, the value of x will be:

(a) 0
(b) 1
(c) –1
(d) None of the above

Q4.

If $(1 + \sin A)(1 + \sin B)(1 + \sin C) = (1 - \sin A)(1 - \sin B)(1 - \sin C)$, $0 < A, B, C, < \frac{\pi}{2}$ then each side is equal to:

(a) cos A cos B cos C
(b) tan A tan B tan C
(c) 1
(d) sin A sin B sin C

Q5. The simplest value of cot 9° cot 27° cot 63° cot 81° is:

(a) 1
(b) –1
(c) $\sqrt{3}$
(d) 0

Q6. If $\sin\theta = 0.7$, then $\cos\theta$, $0 \leq \theta < 90°$, is:

(a) $\sqrt{0.49}$

(b) $\sqrt{0.51}$

(c) $\sqrt{0.9}$

(d) 0.3

Q7. The value of θ, which satisfies the equation $\tan^2\theta + 3 = 3\sec\theta$, $0° \leq \theta < 90°$ is:

(a) 30° or 0°

(b) 45° or 0°

(c) 60° or 0°

(d) 15° or 0°

Q8. The value of $\sin^2 65° + \sin^2 25° + \cos^2 35° + \cos^2 55°$ is:

(a) 1

(b) 2

(c) 1/2

(d) 0

Q9.

Value of $\left(\sin^2 7\frac{1°}{2} + \sin^2 82\frac{1°}{2} + \tan^2 2° \cdot \tan^2 88°\right)$ is:

(a) 2

(b) 0

(c) 4

(d) 1

Q10. Find the value of $1 - 2\sin^2\theta + \sin^4\theta$?

(a) $\cos^4\theta$

(b) $\text{cosec}^4\theta$

(c) $\sec^4\theta$

(d) $\sin^4\theta$

Q11.The height of a right prism with a square base is 15 cm. If the area of the total surfaces of the prism is 608 sq. cm, its volume is

(a) 910 cm^3

(b) 920 cm^3

(c) 960 cm^3

(d) 980 cm^3

Q12.If the diagonals of a rhombus are 8 and 6, then the square of its side is

(a) 25

(b) 55

(c) 64

(d) 36

Q13.The volume of a solid hemisphere is 19404 cm^3. Its total surface area is

(a) 4158 cm^2
(b) 2858 cm^2
(c) 1738 cm^2
(d) 2038 cm^2

Q14. ABCD is a rhombus whose side AB = 4 cm and ∠ABC = 120°, then the length of diagonal BD is equal to:

(a) 1 cm
(b) 2 cm
(c) 3 cm
(d) 4 cm

Q15.

If $\left(x+\frac{1}{x}\right)^2 = 3$.Then the value of $(x^{72}+x^{66}+x^{54}+x^{36}+x^{24}+x^6+1)$ is

(a) 1
(b) 2
(c) 3
(d) 4

Q16.

If $a+b+c=0$, then the value of $\frac{a^2+b^2+c^2}{a^2-bc}$ is

(a) 0
(b) 1
(c) 2
(d) 3

Q17.

If $n = 7+4\sqrt{3}$. then the value of $\left(\sqrt{n}+\frac{1}{\sqrt{n}}\right)$ is

(a) $2\sqrt{3}$
(b) 4
(c) –4
(d) $-2\sqrt{3}$

Q18.

If $a+b+c=6, a^2+b^2+c^2=14$ and $a^3+b^3+c^3=36$, then the value of abc is

(a) 3
(b) 6
(c) 9
(d) 12

Q19.

If a, b are rational numbers and
$(a-1)\sqrt{2}+3 = b\sqrt{2}+a$, the value of $(a+b)$ is

(a) –5
(b) 3
(c) –3
(d) 5

Q20.The graph of the linear equation 3x+4y=24 is a straight line intersecting x-axis and y-axis at the points A and B respectively. P(2, 0) and Q$\left(0, \frac{3}{2}\right)$ are points on the sides OA and OB respectively of ΔOAB, where O is the origin of the co-ordinate system. Given that AB = 10 cm, then PQ =

(a) 20 cm
(b) 2.5 cm
(c) 40 cm
(d) 5 cm

Q21. The ratio of number of balls in bags x, y is 2 : 3. Five balls are taken from bag y and are dropped in bag x, number of balls are equal in each bag now. Number of balls in each bag now is

(a) 45
(b) 20
(c) 30
(d) 25

Q22. If the square of the sum of two numbers is equal to 4 times of their product, then the ratio of these numbers is:

(a) 2 : 1
(b) 1 : 3
(c) 1 : 1
(d) 1 : 2

Q23. Three numbers are in the ratio 1 : 2 : 3. By adding 5 to each of them, the new numbers are in the ratio 2 : 3 : 4. The numbers are:

(a) 10, 20, 30
(b) 15, 30, 45
(c) 1, 2, 3
(d) 5, 10, 15

Q24. Ram got twice as many marks in English as in Science. His total marks in English, Science and Maths are 180. If the ratio of his marks in English and Maths is 2 : 3, what is his marks in Science?
(a) 30
(b) 60
(c) 72
(d) 90

Q25. The ratio in which a man must mix rice at Rs. 10.20 per kg and Rs. 14.40 per kg so as to make a mixture worth Rs. 12.60 per kg, is
(a) 4 : 3
(b) 2 : 5
(c) 18 : 24
(d) 3 : 4

Q26. Two vessel A and B contain milk and water mixed in the ratio 4 : 3 and 2 : 3 respectively. The ratio in which these mixtures be mixed to form a new mixture containing half milk and half water is
(a) 7 : 5
(b) 6 : 5
(c) 5 : 6
(d) 4 : 3

Q27. The proportion of acid and water in three samples is 2 : 1, 3 : 2 and 5 : 3, A mixture containing equal quantities of all three samples is made. The ratio of acid and water in the mixture is:
(a) 12 : 133
(b) 227 : 133
(c) 3 : 8
(d) 5 : 11

Q28. A bank offers 10% compound interest per half year. A customer deposits Rs. 5200 each on 1st January and 1st July of a year. At the end of the year, the amount he would have as profit by way of interest is:
(a) Rs. 3224
(b) Rs. 1612
(c) Rs. 806
(d) Rs. 403

Q29. The sum of the digits of a 2-digit number is 8. If we add 36 to the number, the new number obtained is a number formed by interchange of the digits. What is the number?
(a) 26
(b) 62
(c) 34
(d) 43

Q30. A tent is to be built in the form of a cylinder of radius 5 m surmounted by a cone of the same radius. If the height of the cylindrical part is 6 m and slant height of the conical part is 10 m, how much canvas will be required to build the tent? Allow 20% extra canvas for folding and stitching. (Take $\pi = 22/7$)

(a) 829.72 sq mts

(b) 414.84 sq mts

(c) 1244.58 sq mts

(d) 207.43 sq mts