

MATHS SAMPLE PAPER FOR CLASS 10

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Full Marks : 90

Total Time : 3Hrs

- 1) Evaluate $(\sec^2 A - 1)(1 - \operatorname{cosec}^2 A)$
- 2) Find whether the number 6, 10, 14 and 22 are in proportional or not. If not what number be added to each number so that they become proportional ?
- 3) A cricketer has mean score of 58 runs in nine innings. Find out how many runs are to be scored in the tenth innings to raise the mean score to 61.
- 4) If $\tan A = b/a$ where a and b are real numbers, find the value of $\sin^2 A$
- 5) Reduce the following relation expression into lowest form: $(x^4 - 10x^2 + 9)/(x^3 + 4x + 3x)$
- 6) Find the mean of the following data: 46, 64, 87, 41, 58, 77, 35, 90, 55, 33, 92 If in the data, the observation 92 is replaced by 19, determine the new median.
- 7) Solve for x and y $ax + by = a - b$ - (i) $bx - ay = a + b$ - (ii) (Marks 2) Question
- 8) Find the value of k such that sum of the roots of the quadratic equation $3x^2 + (2k + 1)x - (k + 5) = 0$ is equal to the product of its roots.
- 9) Harshad purchased a motorcycle for Rs. 42,952 which includes the amount of sales tax. If the tax charged is 12% of the list price, find the list price of the motorcycle.
- 10) Find two consecutive numbers, whose square have sum 85.
- 11) The circumference of the edge of a hemispherical bowl is 132 cm. Find the capacity of the bowl ($\pi = 22/7$)
- 12) Without using trigonometric table, show that: $\tan 70^\circ \cdot \tan 230^\circ \cdot \tan 600^\circ \cdot \tan 670^\circ \cdot \tan 830^\circ = \sqrt{3}$ (Marks 2) Question
- 8) Show that $(\sin^2 q - 2\sin^2 3q)/(2\cos^2 3q - \cos^2 q) = \tan^2 q$.
- 13) Find the value of c for which the quadratic equation $4x^2 - 2(c + 1)x + (c + 4) = 0$ has equal roots
- 14) The ages of two girls are in the ratio 5 : 7. Eight years ago their ages were in the ratio 7 : 13. Find their present ages.
- 15) In the given figure chord PQ and RS of a circle intersect at T. If RS = 18 cm, ST = 6 cm and PT = 18 cm, find the length of TQ.
- 16) Find the value of k for which the system of equation $8x + 5y = 9$, $kx + 10y = 15$ has no solution.
- 17) In the given figure $DE \parallel BC$ and $AD : DB = 5 : 4$ Find $\ar(DFE)/\ar(CFB)$.
- 18) Find the G.C.D. of $24(4x^2 - 9)$ and $18(2x^2 + 5x - 12)$
- 19) In the figure $\angle BAC = 30^\circ$. Show that BC is equal to the radius of the circum-circle of ABC whose centre is O.
- 20) In figure ABCD is a cyclic quadrilateral. AE is drawn parallel to CD and BA is produced. If $\angle ABC = 92^\circ$, $\angle FAE = 20^\circ$, find $\angle BCD$.

OR

Rita purchased a car, with a market price of Rs. 2,10,000 at a discount of 5%. If the sales tax charged at 10%, find the amount Rita had to pay for purchasing the car.

- 20) Determine the length of an altitude of an equilateral triangle of side 2a cm.
- 21) The mean weight of 21 students of a class is 52 kg. If the mean weight of first 11 students of the class is 50 kg and that of last 11 students is 54 kg, find the weight of the 11th student.
- 22) In the figure, a circle touches all the four sides of a quadrilateral ABCD where sides $AB = 6$ cm, $BC = 7$ cm and $CD = 4$ cm. Find AD.
- 23) The following data has been arranged in ascending order: 12, 14, 17, 21, x, 26, 28, 32, 36. If the median

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of the data is 23, find x. If 32 is changed to 23, find the new median.

24) For what value of x, in the mode of the following data 5 ? 2, 4, 3, 5, 4, 5, 6, 4, x, 7, 5.

25) Determine graphically the co-ordinates of the vertices of the triangle, the equation of whose sides are:

$y = x$, $3y = x$, $x + y = 8$.