

RAVI MATHS TUITION CENTER, PH- 8056206308**10th MATHS MODEL PAPER 3**

10th Standard

Maths

Exam Time : 03:00:00 Hrs

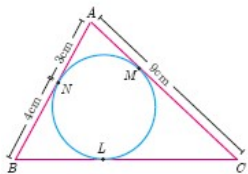
Total Marks : 100

14 x 1 = 14

- 1) Let $f(x) = \sqrt{1+x^2}$ then
(a) $f(xy) = f(x).f(y)$ (b) $f(xy) \geq f(x).f(y)$ (c) $f(xy) \leq f(x).f(y)$ (d) None of these
- 2) If the HCF of 65 and 117 is expressible in the form of $65m - 117$, then the value of m is
(a) 4 (b) 2 (c) 1 (d) 3
- 3) The next term of the sequence $\frac{3}{16}, \frac{1}{8}, \frac{1}{12}, \frac{1}{18}, \dots$ is
(a) $\frac{1}{24}$ (b) $\frac{1}{27}$ (c) $\frac{2}{3}$ (d) $\frac{1}{81}$
- 4) If $(x - 6)$ is the HCF of $x^2 - 2x - 24$ and $x^2 - kx - 6$ then the value of k is
(a) 3 (b) 5 (c) 6 (d) 8
- 5) If A is a 2×3 matrix and B is a 3×4 matrix, how many columns does AB have
(a) 3 (b) 4 (c) 2 (d) 5
- 6) If $\triangle ABC$ is an isosceles triangle with $\angle C = 90^\circ$ and $AC = 5$ cm, then AB is
(a) 2.5 cm (b) 5 cm (c) 10 cm (d) $5\sqrt{2}$ cm
- 7) The straight line given by the equation $x = 11$ is
(a) parallel to X axis (b) parallel to Y axis (c) passing through the origin (d) passing through the point (0,11)
- 8) When proving that a quadrilateral is a trapezium, it is necessary to show
(a) Two sides are parallel. (b) Two parallel and two non-parallel sides. (c) Opposite sides are parallel. (d) All sides are of equal length.
- 9) if $\sin\theta = \cos\theta = a$ and $\sec\theta + \operatorname{cosec}\theta = b$, then the value of $b(a^2 - 1)$ is equal to
(a) $2a$ (b) $3a$ (c) 0 (d) $2ab$
- 10) The value of the expression $[\operatorname{cosec}(75^\circ + \theta) - \sec(15^\circ - \theta) - \tan(55^\circ + \theta) + \cot(35^\circ - \theta)]$ is
(a) -1 (b) 0 (c) 1 (d) $\frac{3}{2}$
- 11) If $\tan\theta = \cot\theta$ the value of $\sec\theta$ is
(a) 2 (b) 1 (c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{2}$
- 12) The height of a right circular cone whose radius is 5 cm and slant height is 13 cm will be
(a) 12 cm (b) 10 cm (c) 13 cm (d) 5 cm
- 13) A cylinder and a cone have the same base and the same height. What is the ratio of their volumes?
(a) 3:1:2 (b) 3:2:1 (c) 1:2:3 (d) 1:3:2
- 14) The sum of all deviations of the data from its mean is
(a) Always positive (b) always negative (c) zero (d) non-zero integer
- 15) A relation 'f' is defined by $f(x) = x^2 - 2$ where $x \in \{-2, -1, 0, 3\}$
(i) List the elements of f
(ii) Is f a function?
- 16) Find the HCF of 396, 504, 636.
- 17) Find the number of terms in the A.P. 3, 6, 9, 12, ..., 111.

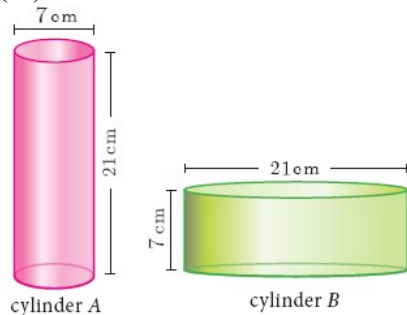
10 x 2 = 20

- 18) Use Euclid's algorithm to find the HCF of 4052 and 12756.
- 19) Find $\frac{x^2+20x+36}{x^2-3x-28} - \frac{x^2+12x+4}{x^2-3x-28}$
- 20) Construct a 3 x 3 matrix whose elements are $a_{ij} = i^2j^2$
- 21) Find the values of k for which the following equation has equal roots.
 $(k - 12)r + 2(k - 12)x + 2 = 0$
- 22) If $\triangle ABC$ is similar to $\triangle DEF$ such that $BC=3$ cm, $EF=4$ cm and area of $\triangle ABC= 54$ cm². Find the area of $\triangle DEF$.
- 23) Find the area of the quadrilateral formed by the points (8, 6), (5, 11), (-5, 12) and (-4, 3).
- 24) if $\cos\theta + \sin\theta = \sqrt{2} \cos\theta$, then prove that $\cos\theta - \sin\theta = \sqrt{2} \sin\theta$
- 25) $1 + \frac{\cot^2\alpha}{1+\operatorname{cosec}\alpha} = \operatorname{cosec}\alpha$
- 26) If the total surface area of a cone of radius 7cm is 704 cm², then find its slant height.
- 27) Find the standard deviation of the following data 7, 4, 8, 10, 11. Add 3 to all the values then find the standard deviation for the new values.
- 28) A die is rolled and a coin is tossed simultaneously. Find the probability that the die shows an odd number and the coin shows a head.
- 9 x 5 = 45
- 29) The distance S (in kms) travelled by a particle in time 't' hours is given by $S(t) = \frac{t^2+t}{2}$. Find the distance travelled by the particle after
 (i) three and half hours.
 (ii) eight hours and fifteen minutes.
- 30) How many terms of the series 1 + 5 + 9 + must be taken so that their sum is 190?
- 31) Find the sum to n terms of the series 5 + 55 + 555 + ...
- 32) Prove that the equation $x^2(p^2 + q^2) + 2x(pr + qs) + r^2 + s^2 = 0$ has no real roots. If $ps = qr$, then show that the roots are real and equal.
- 33) Find the square root of the following expressions
 $(16x^2 + x - 1)(3x^2 + 2x - 1)(2x^2 + 3x + 1)$
- 34) Find the values of 'k' such that quadratic equation $(k + 9)x^2 + (k+1)x + 1 = 0$ has no real roots?
- 35) In Fig, $\triangle ABC$ is circumscribing a circle. Find the length of BC.



- 36) A tv tower stands vertically on a bank of a canal. the tower is watched from a point on the other bank directly opposite to it. the angle of elevation of the top of the tower is 58°. from another point 20m away from this point on the line joining this point of the tower, the angle of elevation of the top of the tower is 30°. find the height of the tower and the width of the canal. ($\tan 58^\circ = 1.6003$)
- 37) For the cylinders A and B (Fig. 7.27),
 (i) find out the cylinder whose volume is greater.
 (ii) verify whether the cylinder with greater volume has greater total surface area.

(iii) find the ratios of the volumes of the cylinders A and B.



$$9 \times 8 = 72$$

38) Draw the graph of $y = x^2 - 4$ and hence solve $x^2 - x - 12 = 0$

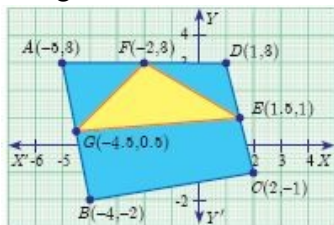
39) The roots of the equation $x^2 + 6x - 4 = 0$ are α, β . Find the quadratic equation whose roots are $\alpha^2\beta$ and $\beta^2\alpha$

40) Let $A = \begin{bmatrix} 1 & 2 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 4 & 0 \\ 1 & 5 \end{bmatrix}$, $C = \begin{bmatrix} 2 & 0 \\ 1 & 2 \end{bmatrix}$ Show that $(A - B)^T = A^T - B^T$

41) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{3}$)

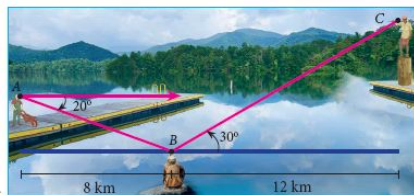
42) Draw a triangle ABC of base BC = 5.6 cm, $\angle A = 40^\circ$ and the bisector of $\angle A$ meets BC at D such that CD = 4 cm.

43) In the figure, find the area of triangle AGF



44) Find the equation of a line passing through (6, -2) and perpendicular to the line joining the points (6, 7) and (2, -3).

45) Three villagers A, B and C can see each other across a valley. The horizontal distance between A and B is 8 km and the horizontal distance between B and C is 12 km. The angle of depression of B from A is 20° and the angle of elevation of C from B is 30° . Calculate :
the vertical height between A and B.
($\tan 20^\circ = 0.3640$, ($\sqrt{3} = 1.732$))



46) The probability that a student will pass the final examination in both English and Tamil is 0.5 and the probability of passing neither is 0.1. If the probability of passing the English examination is 0.75, what is the probability of passing the Tamil examination?
