

- answer to the next tenth place.
- 22) Find the slope of the straight line is $6x + 8y + 7 = 0$.
- 23) Prove the identity $\tan^2 \theta - \sin^2 \theta = \tan^2 \theta \sin^2 \theta$.
- 24) Find the angle of elevation of the top of a tower from point on the ground. Which is 30 m away from the foot of a tower of height $10\sqrt{3}$ m.
- 25) If the ratio of radii of two spheres is 4:7. Find the ratio of their volumes.
- 26) A Cone of height 24 cm is made up of modeling clay. A Child reshapes it in the form of a cylinder of same radius as Cone. Find the height of the cylinder.
- 27) Find the range and Co-efficient at range of 63, 89, 98, 125, 79, 108, 117, 68
- 28) Two coins are tossed together. What is the probability of getting different faces on the coins.

Part - III

III. Answer 10 questions: Question No. 42 is compulsory. $10 \times 5 = 50$

- 29) Let A = The set of all natural numbers less than 8, B = The set all prime numbers less than 8, C = The set of even prime number. Verify that $A \times (B - C) = (A \times B) - (A \times C)$.
- 30) Let $f: A \rightarrow B$ be a function defined by $f(x) = x/2 - 1$, Where $A = \{2, 4, 6, 10, 12\}$ $B = \{0, 1, 2, 4, 5, 09\}$. Represented 'f' by
 (i) Set of ordered pairs
 (ii) a table
 (iii) an arrow diagram
 (iv) a graph.
- 31) Find the 15th, 24th, and nth term (general term) of an A.P. given by 3, 15, 27, 39,
- 32) Find the sum to n terms of the series $3 + 33 + 333 + \dots$
- 33) Find the square root of the expression
- $$\frac{4x^2}{y^2} + \frac{20x}{y} + 13 - \frac{30y}{x} + \frac{9y^2}{x^2}$$
- 34) $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$ Show that $A^2 - 5A + 7I_2 = 0$
- 35) State and prove Basic proportionality theorem.
- 36) Prove the identity

$$\sqrt{\frac{1 + \sin \theta}{1 - \sin \theta}} + \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = 2 \sec \theta$$

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X - Mathematics

- 37) Two ships are sailing in the sea on either side of a lighthouse. The angle of elevation of the top of the light house as observed from the ships are 30° and 45° respectively. If the lighthouse is 200 m high, find the distance between the two ships. ($\sqrt{3} = 1.732$)
- 38) An Industrial Metallic bucket is to the shape of the frustum of a right circular cone whose top and bottom diameters are 10 m and 4m and whose height is 4 m. Find the curved and total surface area of the bucket.
- 39) Seenu's house has an overhead tank in the shape of a cylinder. This is filled by pumping water from a sump (underground tank) which is in the shape of a cuboid. The sump has dimensions $2\text{m} \times 1.5\text{m} \times 1\text{m}$. The overhead tank has its radius of 60 cm and height 105 cm. Find the volume of water left in the sump after the overhead tank has been completely filled with water from the sump which has been full, initially.
- 40) Find the mean and Variance of the first n natural numbers.
- 41) In a class of 35, Students are numbered from 1 to 35. The ratio of boys to girls is 4:3. The roll numbers of students begin with boys and end with girls. Find the probability that a student selected is either a boy with prime roll number or a girl with composite roll number or an even roll number.
- 42) Find the area of the quadrilateral, formed by the points (8, 6), (5, 11) (-5, 12) and (-4, 3).

Part - IV

IV. Answer both questions choosing either of the alternatives. $2 \times 8 = 16$

- 43) a) Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle.
[or]
b) Construct a Δ PQR in which $QR = 5\text{ cm}$, $\angle P = 40^\circ$ and the median PG from P to QR is 4.4 cm. Find the length of the altitude from P to QR.
- 44) a) Draw the graph of $y = x^2 + x - 2 = 0$ and hence Solve $x^2 + x - 2 = 0$.
[or]
b) A mobile phone is put to use when the battery power is 100%. The percent of battery power 'y' (in decimal) remaining after using the mobile phone for n hours is assumed as $y = 0.25x + 1$.
- Draw a graph of the equation.
 - Find the number of hours elapsed if the battery power 40%.
 - How much time does it take so that the battery has no power?