

Ts10M

- 13) Variance of first 20 natural numbers is
a) 32.25 b) 44.25 c) 33.25 d) 30
- 14) The probability of getting a job for a person is $\frac{x}{3}$. If the probability of not getting the job is $\frac{2}{3}$ then the value of x is
a) 2 b) 1 c) 3 d) 1.5

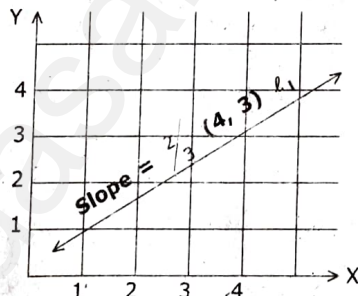
PART - II

10x2=20

Note : Answer any 10 questions. Q.No.28 is compulsory.

- 15) If $B \times A = \{(1, 2) (1, -2) (1, 3) (-4, 2) (-4, -2) (-4, 3)\}$ then find A and B
- 16) Given that $f(x) = \begin{cases} \sqrt{x-1} & x \geq 1 \\ 4 & x < 1 \end{cases}$ find (i) $f(0)$
(ii) $f(3)$
- 17) Find the rational form of the number 0.6666...
- 18) Find the 19th term of an AP -11, -15, -19,
- 19) Solve: $2x-3y = 6, x+y = 1$
- 20) Determine the quadratic equation whose sum and product of roots are -9 and 20.
- 21) State Menelaus theorem.
- 22) Show that the points P(-1.5, 3) Q(6, -2) R(-3, 4) are collinear

- 23) Find the equation of straight line ' ℓ_1 ' for the given diagram.



- 24) A tower stands vertically on the ground which is 48 m away from the foot of the tower, the angle of elevation of the top of the tower is 30° , Find the height of the tower.
- 25) Find the diameter of a sphere whose surface area is 154 m^2 .
- 26) What is the probability of drawing either a king or a queen in a single draw from a well shuffled pack of 52 cards?
- 27) If the range and coefficient of range of the data are 20 and 0.2 respectively, then find the largest and smallest values of the data.
- 28) Find 'n' so that the n^{th} terms of the following two A.P.'s are the same
1, 7, 13, 19, and 100, 95, 90,

PART - III

10x5=50

Note : Answer any 10 questions. Q.No.42 is compulsory.

- 29) Let $A = \{1, 2, 3, 4\}$ and $B = \{2, 5, 8, 11, 14\}$ be two sets, Let $f: A \rightarrow B$ be a function given by $f(x) = 3x-1$. Represent this function (i) by arrow diagram (ii) table form (iii) as a set of ordered pairs (iv) in a graphical form
- 30) Consider the functions $f(x) = x^2$, $g(x) = 2x$ and $h(x) = x+4$. Show that $(f \circ g) \circ h = f \circ (g \circ h)$
- 31) If a, b, c are three consecutive terms of an A.P. and x, y, z are three consecutive terms of a G.P. then prove that $x^{b-c} \times y^{c-a} \times z^{a-b} = 1$

- 32) Rekha has 15 square colour papers of sizes 10 cm, 11 cm, 12 cm... 24 cm. How much area can be decorated with these colour papers?
- 33) If the polynomial $4x^4 - 12x^3 + 37x^2 + bx + a$ is a perfect square then find the value of 'a' and 'b'.
- 34) State and demonstrate pythagoras theorem.
- 35) If $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & -1 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & -1 \\ -1 & 4 \\ 0 & 2 \end{bmatrix}$ show that $(AB)^T = B^T A^T$
- 36) Find the equation of a line passing through (6, -2) and perpendicular to the line joining the points (6, 7) and (2, -3)
- 37) If the radii of the circular ends of a frustum which is 45 cm high are 28 cm and 7 cm, find the volume of the frustum.
- 38) A 14 m deep well with inner diameter 10 m is dug and the earth taken out is evenly spread all around the well to form an embankment of width 5m. Find the height of the embankment.
- 39) From a point on the ground, the angles of elevation of the bottom and top of a tower fixed at the top of a 30 m high building are 45° and 60° respectively. Find the height of the tower. ($\sqrt{3} = 1.732$)
- 40) Find the coefficient of variation of 24, 26, 33, 37, 29, 31.
- 41) In a class of 50 students, 28 opted for NCC, 30 opted for NSS and 18 opted both NCC and NSS. One of the students is selected at random. Find the probability that (i) the student opted for NCC but not NSS (ii) the student opted for NSS but not NCC (iii) the student opted for exactly one of them.
- 42) Solve: $px^2 - (p+q)^2x + (p+q)^2 = 0$

PART - IV

2x8=16

Note : Answer all the questions.

- 43) a) Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.
- (OR)
- b) Construct a ΔPQR in which the base $PQ = 4.5$ cm, $\angle R = 35^\circ$ and the median from R to PQ is 6 cm.
- 44) a) A bus is travelling at a uniform speed of 50 km/hr. Draw the distance-time graph and hence find (i) the constant of variation (ii) how far will it travel in $1\frac{1}{2}$ hr. (iii) the time required to cover a distance of 300 km from the graph.

(OR)

- b) Draw the graph of $y = x^2 - 4x + 3$ and use it to solve $x^2 - 6x + 9 = 0$

SIWAKUMAR. M, Sri Ram Matric HSS
Vallam - 627809, Tenkasi Dist.