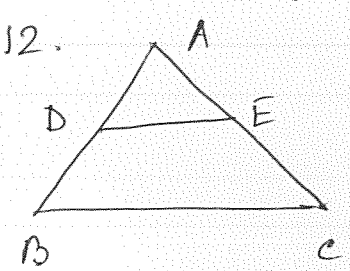


Sec-A (1 mark each)

1. Find the nature of roots  $ax^2+bx+c=0$ , if  $a > 0$ ,  $b=0$ ,  $c > 0$
2. Write an equation, which is parallel to  $2x+3y+6=0$
3. If  $(a-b)$ ,  $a$  and  $(a+b)$  are zeros of the polynomial  $2x^3-6x^2+5x-7$ , write the value of  $a$ .
4. The value of  $\cos 1^\circ \cos 2^\circ \cos 3^\circ \dots \cos 180^\circ$  is \_\_\_\_\_.
5. If a tower 30m high, casts a shadow  $10\sqrt{3}$  m long on the ground, then the angle of elevation of the sun is \_\_\_\_\_.
6. \_\_\_\_\_  $\times$  Median = \_\_\_\_\_ +  $2x$  \_\_\_\_\_.
7. In a family of 3 children, \_\_\_\_\_ is the probability of having at least one boy.
8. ABCD is a trapezium, O is the point of intersection of AC and BD,  $AB \parallel CD$  and  $AB = 2 \times CD$ . If the area of  $\triangle AOB = 84 \text{ cm}^2$ , the area of  $\triangle COD =$  \_\_\_\_\_.
9. For what values of  $k$ , the equation  $kx^2-6x-2=0$  has real roots?  
(i)  $k \leq -\frac{9}{2}$  (ii)  $k \geq -\frac{9}{2}$ , (iii)  $k \leq -2$  (iv) None of these.
10. On dividing a positive integer  $n$  by 9, we get 7 as remainder. \_\_\_\_\_ will be the remainder, if  $(3n-1)$  is divided by 9.

11. If  $2^n \times 5^n$  ends with 5, then <sup>find</sup>  $n =$  \_\_\_\_\_.



12. If  $DE:BC = 3:5$ , then  $\text{ar}(\triangle ADE) :$   
 $\text{ar}(\text{trapezium } BCED) =$  \_\_\_\_\_.

13. If  $\sin A + \sin^2 A = 1$ , then  $\cos^2 A + \cos^4 A =$  \_\_\_\_\_.

14.

14. Given that one of the zeroes of the cubic polynomial,  $ax^3 + bx^2 + cx + d$  is zero, the product of the other two zeroes is

(i)  $-\frac{c}{a}$     (ii)  $\frac{c}{a}$     (c) 0    (d)  $-\frac{b}{a}$

15. If  $am \neq bl$ , then the system of equations  $ax + by = c$  and  $lx + my = n$

(a) has a unique solution    (b) has no solution  
 (c) has infinitely many solutions    (d) may or may not have a solution.

16. If  $\sin \alpha$  and  $\cos \alpha$  are the roots of the equation  $ax^2 + bx + c = 0$ , then  $b^2 =$  \_\_\_\_\_

(i)  $a^2 - 2ac$     (ii)  $a^2 + 2ac$     (iii)  $a^2 - ac$     (iv)  $a^2 + ac$

17. \_\_\_\_\_ is the probability of having 53 ~~Sat~~ Sundays in a year.

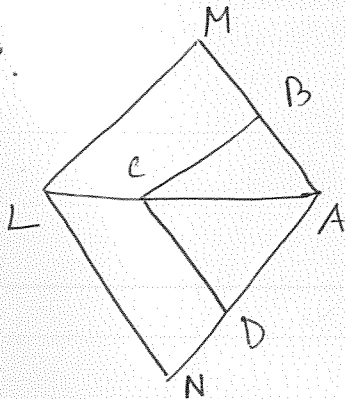
18. The median of the data: 6, 7,  $x-2$ ,  $x$ , ~~20~~, 17, 20, written in ascending order, is 16, then  $x =$  \_\_\_\_\_.

19. The value of  $6 \tan^2 \theta - \frac{6}{\cos^2 \theta} =$  \_\_\_\_\_

20. \_\_\_\_\_ is the point on y-axis which is equidistant from the points  $(-5, 2)$  and  $(9, -2)$ .

Sec B (2 marks) (6)

21.



In the given figure,  $LM \parallel CB$  and  $LN \parallel CD$

P.T.  $\frac{AM}{AB} = \frac{AN}{AD}$

22. The mean of 10 observations is 15.3. If two observations 6 and 9 are replaced by 8 and 14 respectively, find the new mean.

23. Two dice are thrown at the same time. Find the prob. of getting different numbers on both dice.
24. PT  $7-2\sqrt{2}$  is an irrational number, given that  $\sqrt{2}$  is irrational.
25. If  $\sin\theta + \cos\theta = \sqrt{2} \cos(90^\circ - \theta)$ , find  $\cot\theta$ .
26. Find the value of  $k$  for which the equation  $5x^2 - kx + 1 = 0$  has real roots.

Sec-c (3 marks each)  $\times 8$

27. Solve the following pair of linear equations for  $x$  and  $y$

$$\frac{x}{a} + \frac{y}{b} = 2 \quad ; \quad ax - by = a^2 - b^2$$

28. PT the sum of the squares of the diagonals of a  $11^{\text{cm}}$  is equal to the sum of the squares of its sides.
29. If  $n$  is an odd integer then show that  $(n^2 - 1)$  is divisible by 8.
30. Obtain all zeros of the polynomial  $2x^3 - 4x - x^2 + 2$ , if two of its zeros are  $\sqrt{2}$  and  $-\sqrt{2}$ .
31. Solve for  $x$ :  $2\left(\frac{2x+3}{x-3}\right) - 25\left(\frac{x-3}{2x+3}\right) = 5$ .
32. If  $P(x, y)$  is equidistant from  $A(a+b, b-a)$  and  $B(a-b, a+b)$ , PT  $bx = ay$ .
33. Find the largest 4-digit number which when divided by 4, 13 and 7, leaves a remainder of 3 in each case.
34. PT  $\frac{\sin\theta}{(\sec\theta + \tan\theta - 1)} + \frac{\cos\theta}{(\operatorname{cosec}\theta + \cot\theta - 1)} = 1$

Sec-D (1 marks each)  $\times 6$

35. If two sides and a median bisecting the third side of a triangle are respectively proportional to the corresponding sides and the median of another triangle, then PT two  $\Delta$ s are similar.

36. A man sold a chair and a table together for ₹1520 thereby making a profit of 25% on the chair and 10% on the table. By selling them together for ₹1535 he would have made a profit of 10% on the chair and 25% on the table. Find the cost price of each.

37. If  $(3,3)$ ,  $(6,y)$ ,  $(x,7)$  and  $(5,6)$  are the vertices of a parallelogram taken in order, find  $x$  and  $y$ .

38. A person standing on the bank of a river observes that the angle of elevation of the top of the tree standing on the opposite bank is  $60^\circ$ . When he moves 30 m away from the bank, he finds the angle of elevation to be  $30^\circ$ . Find the height of the tree and the width of the river.

39. Calculate the median for the following data:

Marks obtained	No. of students
Below 10	6
Below 20	15
Below 30	29
Below 40	41
Below 50	60
Below 60	70

40. PT both the roots of the equation  $(x-a)(x-b) + (x-b)(x-c) + (x-c)(x-a) = 0$  are real but they are equal only when  $a=b=c$

OR  
A piece of cloth costs ₹200. If the piece was 5 m longer and each meter of cloth costs ₹2 less, the cost of the piece would have remained unchanged. How long is the piece and what is the original rate per meter?