CLASS X
SAMPLE PAPER
MATHS

Max.Marks: 80

Section B has 6 questions of 2 marks each, Section C has 10 questions of 3 marks each and Section D has 8 questions of 4 marks each.

All questions are compulsory.

There is no overall choice. However, internal choices are given in 4 questions of 3 marks and 3 questions of 4 marks. Answer any one of the alternatives in such cases.

Section-A

1. Decimal representation of $\frac{3}{40}$ ends after ____ digits of decimal.
   a) 1   b) 2   c) 3   d) None of these.
2. The condition $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ with respect to linear equations in two variables suggests that the system of equations has____
   a) No solution   b) Infinitely many solutions   c) unique solution   d) none of these
3. Curved surface area of a cone is 330 cm^2 .If its slant height is 15 cm, then radius is __
   a) 14 cm   b) 7 cm   c) 10 cm   d) 15 cm
4. Two dice are tossed together. Probability of getting same score on both is____
   a) 1/36   b) 5/36   c) 5/6   d) 1/6
5. Distance between the points (4,0) and (- 4,0) is _____
   a) 4 units   b) 8 units   c) 16 units   d) none of these
6. Two circles of radii 5 cm and 3 cm touch internally. The distance between their centres is ____ a) 3 cm   b) 2 cm   c) 8 cm   d) none of these.

Section-B

7. Prove that √2 is irrational.
8. Find the distance between the ponts (2,3) and (6,6).
9. Prove that diagonals of a trapezium intersect proportionally.

10. Prove that perpendicular to radius at its end point is tangent to the circle.
11. Length of an arc of a circle of radius 3.5 cm is 4.4 cm. Find the area of the corresponding minor sector.
12. Evaluate: $\cos^2 30^o + \sin^2 60^o - \tan 45^o$

Section-C

13. Prove that only one of n + 1, n + 2, n + 3 is divisible by 3

OR

If *x* and *y* are two odd positive integers then showthat $x^2 + y^2$ is even but not divisible by 4.

14. The remainder on dividing $x^3 + 3x^2 + kx+ 3$ *by x – 3 is* 21. Find '*k*' and hence the zeroes of the polynomial $x^3 + 3x^2 + kx-18$

OR

Find all zeroes of $x^4 + x^3 – 9x^2$- 3x +8 if -√3 and √3 are two of its zeroes.

15. If Q(0,1) is equidistant from P(5,-3) and R(x,6), find 'x' and also distance PR

OR

Find the ratio in which the point (11,y) divides the line joining the points (15,5) and (9,20). Also find the point of division.

16. Prove that in a right triangle the area of the square on the hypotenuse is equal to the sum of the areas of squares on the other two sides.
17. PT is a tangent to the circle with centre 'O' and PAB is a secant. Prove that PT^2= PA .PB
18. Radii of top and bottom of a 24 cm high bucket are 35 cm and 28 cm. Find the curved surface area of the bucket.
19. The following are the daily wages of 50 workers of a factory. Find mean by any appropriate method.

Daily wages(Rs)	100-120	120-140	140-160	160-180	180-200
No.of workers	12	14	8	6	10

OR

The mean of the following data is 50. Find the missing frequencies.

Class Int	0-20	20-40	40-60	60-80	80-100	Total
Freq	17	x	32	y	19	120

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20. A bag contains 18 green, 12 black and some blue balls. By adding 6 more blue balls the probability of drawing a blue ball becomes $\frac{5}{6}$ time the probability of drawing a black ball. Find the original number of blue balls in the bag.

21. Prove: $\frac{\tan A}{1+\sec A} - \frac{\tan A}{1-\sec A} = 2\, cosec\, A$

22. If sin(A + B) = 1 and sin(A-B) = $\frac{\sqrt{3}}{2}$ find measure of A and B.

Section-D

23. Cost of a motor cycle is Rs. 1,60,000. Mohan agrees to pay Rs.60,000 cash down and rest in 10 equal instalments. If the interest at 8% is charged on outstanding balance, find how much did Mohan pay for the motorcycle.

24. Students of a class are made to stand in rows having equal number of students in each row. Had there been 3 students more in each row, 2 rows would have been reduced but had there been 2 students less in each row 2 more rows would have been added. Find the strength of the class and number of students in each row.

OR

Students of a class planned a picnic. The budget for food was Rs.6000. Since 5 students did not turn up each of the others had to pay Rs. 40 more. Find number of students who attended picnic and strength of the class.

25. Find the roots of the equation by factorization (after reducing to quadratic form)

$$\frac{2x+3}{4x+3} + \frac{3x+5}{4x-2} = 2$$

26. The difference between squares of two positive integers is 180. If the square of the smaller number is 8 times the larger number, find the two numbers.

27. If cosec A + cot A = p, show that cos A = $\frac{p^2-1}{p^2+1}$

OR

Angle of elevation of a jet flying horizontally at a height of 3000√3 m above the gorund, from a point on the ground was seen to be 60°. After 15 seconds of flight the angle changes to 45° . Find the speed of the jet.

28. ABC is a right triangle,right angled at B, D and E are points on BC such that BD = DE = EC. Prove that 8 AE^2 = 3AC^2 + 5AD^2

29. A solid is in the form of cylinder surmounted by a cone of same radius. If the radius of the cylinder is 7 cm, height of cone 10 cm and total height of solid is 30 cm find the volume of the solid.

30. The median of the following data is 28.5. Find the missing frequencies.

Class Int	0-10	10-20	20-30	30-40	40-50	50-60l
Freq	5	x	20	15	y	5

Total 120

OR

The following distribution shows weights of 45 students of a class. Find the mode.

Weight(Kg)	40-45	45-50	50-55	55-60	60-65	65-70
Freq	6	10	8	9	7	5

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