CLASS X
SAMPLE PAPER
MATHS

Max. Marks: 80

Note: (i) This question paper consists of 40 questions divided into 4 sections A,B,C &D.

(ii) Questions in Section A carry 1 mark each, Section B carry 2 marks each, Section C carry 3 marks each and Section D carry 4 marks each.

(iii) There is no overall choice. However, internal choices are provided in 2 questions of Section A, 2 questions of Section B, 3 questions of Section C and 3 questions of Section D.

(iv) Use of calculators prohibited.

Section-A

1. Given √2 = 1.41, the value of √8 is ___
   a) 2.14 b) 2.28 c) 2.82 d) 4.28
2. Decimal representation of $\frac{117}{2500}$ terminates after ____ decimal digits.
   a) 2 b) 3 c) 4 d) 5
3. If 2 isa zero of the polynomial $x^3 - 6x^2 + px - 6$ *the value of 'p' is* _____
   a) 11 b) – 11 c) 12 d) – 10
4. The graph of the equation $4x - y = 8$ is intersected by the *x-axis* at _____
   a) (2,0) b) (o,2) c) (-2, 0) d) (0, - 2)
5. The distance of the point (5,12) from the origin is ___ units.
   a) 5 b)10 c) 13 d) 14
6. If the points (2,5), (4, 6) and (x, 2) are collinear, then x = __
   a) 5 b) 6 c) 7 d) 8
7. Probability of getting 53 Sundays in a leap year is _____
   a) 1/7 b) 2/7 c) 3/7 d) None of these
8. If cot θ = 4/3, $\text{cosec}^2\theta$ = ___
   a) 5/3 b) 25/3 c) 25/9 d) 9/25
9. Value of $\tan 85^o \sin 65^o \cos 0^o \sec 25^o \tan 5^o$ is ____
   a) 0 b) 1 c) 4 d) None of these
10. Length of the shadow of 6m high pole is 6√3 m. The altitude of the Sun is ____

a) 60^o b) 30^o c) 45^o d) None of these

Q,11-15 (Fill in the Blanks)

11. If 3+ √2 is ione of the roots of the equation $ax^2 + bx + c = 0$, the other root is ____
12. Length of arc of a circle of radius 8 cm is 12 cm. The area of the corresponding sector is –___
13. _____ is the score that divides the given data into exactly two halves.
14. Incircle of ΔABC touches the sides AB, BC and AC at D, E and F respectively. If AD = 3.5 cm, BE = 2.6 cm and CF = 3 cm The perimeter of the triangle is ___
15. The division algorithm is _____

Q.16-20 (Short answer Questions)

16. Find the smallest number whih when increased by 3 becomes divisible by 12, 15 and 18.

OR

Find the largest number that divides 64, 83 and 102 leaving remainders 1, 2 and 3 respecively.

17. In ΔABC D is a point on AC such that ∟BDC = ∟ABC. If AC = 8 cm, CD = 2 cm, Find the length of BC.
18. In a right ΔABC having ∟A = 90^o, AD ⍰ BC. If BD = 2 cm and CD = 8 cm find the length of AD.
19. For what value of 'k' the equation $2x^2 + kx + 2 = 0$ will have real roots?
20. How many terms are there in the A.P. 6, 10, 14,18,…….174?

OR

Find the 15^{th} term from the last of the A.P. 5, 12,19,…….250.

Section-B

21. Find the zeroes of the polynomial $9x^2 – 5\sqrt{6}x – 4$ and verify the relationship with the coefficients.

OR

Find the value of 'm' such that (x – 5) is a factor of the polynomial $3x^3 – 16x^2 + mx + 50$

22. ABC is right triangle right angled at B. Prove that the perpendicular from B divides the triangle into two triangles similar each other and to original triangle.
23. Prove : $\frac{\tan(90°-A)cotA}{cosec^2 A} - cos^2 A = 0$

OR

Evaluate : $2(\cos^2 45^0 + \tan^2 60^o) – 6(\sin^2 45^o – \tan^2 30^o)$

24. Find the area of a circular track of width 3.5 m and inner radius 21m.

25. From a well shuffled pack of cards find th probability of drawing a (i) face card (ii) a black card.\
26. A bag contains 4 red, 3 blue and 9 red balls. How many green balls should be removed so that the difference between probability of drawing a green ball and probability of drawing a red ball is 1/12.

Section-C

27. Given √2 and √3 are irrational prove √3 + √2 is irrational.

OR

Prove that the cube of a positive integer is of the form 9m, 9m +1 or 9m +8 for some integer m.

28. Solve for 'x' and 'y'.: 73x +29y = 380 : 29x + 73y = 28

OR

Two stations are 60kms apart. Two cars start from these stations simultaneously. If they travel in the same direction they meet in 3 hours, but if the travel in opposite directions they meet in 20 minutes. Find the speeds of the cars.

29. A person saves Rs. 30 on 1st February 1996 and increases his savings every day by Rs.20. Find the amount saved by him in the month.
30. ABCD is a quadrilateral in which AD = BC. If P,Q, R and S are midpoints of AB, AC, DC and DB prove that PQRS is a rhombus.

OR

Side AC of ΔABC is produced to D such that CD = ½ AC. If E is the midpoint of BC and DE produced meets AB at F, prove that EF = ⅓ DF.

31. In what ratio the joining points (12, 5) and (4, - 3) is divided by the line y = 2. Find the coordinates of the point of division.
32. Construct a triangle ABC in which AB = 4.5 cm, BC = 5 cm and ∟B = 45°, then construct a similar triangle to ABC with scale factor ⅘.
33. Prove : $\frac{cos^3\theta + sin^3\theta}{cos\theta + \sin\theta} + \frac{cos^3\theta - sin^3\theta}{cos\theta - \sin\theta} = 2$
34. A trapezoid field has parallel sided measuring 70 m and 20 m. A horse is tetheredat each corner of the field with a rope of length 3.5 m. Find the area not grazed by the horses if the perpendicular distance between the parallel sides is 28 m.

Section- D

35. Cost of a piece of cloth is Rs.400. Had the cloth been 4 m longer and the rate per meter been Rs. 5 less the cost would have remained same. Find the length of the cloth and rate per meter.

OR

If the remainder on division of $x^3 + 2x^2 + kx + 3$ by $(x - 3)$ *is 21* Find the quotient and value of 'k'. Hence find the zeroes of the polynomial $x^3 + 2x^2 + kx - 18$

36. Water flows through a cylindrical pipe whose inner radius is 1 cm at the rate of 80cm/sec into an empty cylindrical tank of radius 40 cm. What will be the level of water in the tank after half an hour.

OR

A metallic right circular cone of height 20 cm and whose apical angle is 60^o is cut into two parts at the middle of its height by a plane parallel to the base. If the frustum so obtained is drawn into a wire of diameter $\frac{1}{16}$ cm, find the length of the wire.

37. If the median of the following distribution is 28.5 find the missing frequencies.

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

OR

Draw a 'less than' type of ogive for the following data and obtain the median height from the graph. Verify the result by using the formula.

Wt(Kg)	<30	<40	<42	<44	<46	<48	<50	<52
No. of students	0	3	5	9	14	28	32	35

38. Two poles of equal height stand opposite to each other on either side of a 80 m wide road. From a point between them on the road the angles of elevation of their tops were found to be 60^o and 30^o respectively. Find the height of the poles and the distance of point from the poles.
39. In ΔABC, AD is the median on BC. Prove that $AB^2 + AC^2 = 2AD^2 + ½ BC^2$
40. The houses in a row are numbered consecutively 1 to 49. Find the house number such that sum of the house numbers preceding it is equal to the sum of the house numbers succeeding it.