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. L.C.M. of two numbers is 192 and their product is 3072. Their H.C.F. is __
   a) 18 b) 16 c) 8 d) 48
2. Which of the following is not a terminating decimal?
   a) $\frac{125}{441}$ b) $\frac{50}{125}$ c) $\frac{77}{200}$ d) $\frac{129}{25}$
3. The maximum number of zeroes of a biquadratic polynomial is___
   a) 3 b) 2 c) 4 d) 5
4. The line *4x – 3y – 12 =0 intersects* x-axis at ____
   a) (0,4) b) (0,3) c) (0, - 4) d) (-4, 0)
5. Distance between the points (-6,0) and (6, 0) is ___
   a) 6 units b) 0 units c) 12 units d) 36 units
6. If sin 5θ = cos 4θ, then value of tan 6θ is ____
   a) ½ b) √3 c) $\frac{\sqrt{3}}{2}$ d) $\frac{1}{\sqrt{2}}$
7. If the points (a,0), (0,b) and (1,1) are collinear then $\frac{1}{a}+\frac{1}{b}$ = __
   a) 1 b) 2 c) 0 d) – 1
8. $Cos^4 A – sin^4 A$ = ____
   a) $2cos^2 A – 1$ b) $2cos^2 A + 1$ c) $2sin^2 A – 1$ d) $2sin^2 A + 1$

9. Median of a grouped date can be obtained with the help of ____
   a) Frequency polygon b) Histogram c) bar graph d) ogive.
10. Given sin A = cos A, the measure of angle A is ___
    a) 60^o b) 45^o c) 90^o d) 0^o

Q.11-15 Fill in the blanks:-

11. The formula for finding the slant height of frustum of a cone is --__
12. A bag contains 3 red balls and some white balls. If the probability of drawing a white ball is 4 times that of the red ball, the number of white balls is ___.
13. In a triangle measure of one of the angles is equal to sum of the other two. Hence the triangle must be a ____ triangle.
14. If $x + 1, 3x+1$ and $6x - 1$ re in A.P, then x = _____
15. If the roots of the equation $ax^2 + bx + c = 0$ are both positive then the sign of b is __.

Q.16-20 Short answer questions.

16. Find the HCF (64,48) usng Euclid's division lemma.

OR

Find the smallest number that leaves remainders 1,2,3 and 4 respectively when divided by 2,3,4 and 5.

17. Find 15^{th} term from the last of the A.P. 7,11,15……..103.

OR

First term of an A.P. is 6,last term is 181. How many terms are there if their sum is 3366.

18. In a ΔABC, AB = AC. If DE ‖ BC show that DB = EC
19. In a right triangle ABC having sides a,b and c where c is the hypotenuse *'p'* is altitude from the right vertex. Show that $pc = ab$.
20. If 5 is a zero of the polynomial $5x^2 - 26x + k$, find 'k'.

Section-B

21. Length of arc of a circle of radius 6 cm is 8 cm. Find the area of the corresponding sector.

OR

A square of side 7 cm is inscribed in a circle. Find the area of the circle.

22. In a leap year what is the probability of getting 53 Sundays?
23. If $4\tan\theta = 3$ find value of $\operatorname{cosec}\theta$ and $\cot\theta$

OR

If $\sin(30 + \theta) = \cos\theta$ find θ. Both $30 + \theta$ and θ are acute angles.

24. Diagonals AC and BD of a trapezium ABCD intersect at O. If AO = (3x – 19), OC = (x – 3),
25. For what value of 'k' the equation $4x^2 - 3kx + 1 = 0$ will have equal roots?

26. A bag contains 4 red balls and 6 blue balls. How many red balls should be added so that the probability of drawing a red ball becomes ⅝?

Section- C

27. The co-ordinates of midpoints of sides AB, BC and CA of Δ ABC are (4, - 3), (3, -2) and (-3,1) respectively. Find the coordinates of the vertices of Δ ABC.

OR

Find the coordinates of points of trisection of the line joining points A (6, -4) and B(-3,8)

28. A circular track has a perimeter of 360 m. A and B walk round this track with speed of 20m/ minute and 24 m/minute respectively. If they start together at the starting point-walking in the same direction-at 7 A.M when do they meet at the starting point again?
29. Prove that (1 + cotθ – cosec θ)(1 + tanθ + secθ) = 2

OR

Prove $\frac{\tan(90°-\theta)cot\theta}{cosec^2\theta} - cos^2\theta = 0$

30. A rectangular playground measuring 42m x 8 m has semicircular ends with smaller side as the diameter. Find the area of the ground.

OR

A hollow sphere of internal and external diameter 4 cm and 8 cm respectively is melted and recast into a cone whose diameter of the base is 8 cm. Find the height of the cone.

31. L,M and N are points on sides BC, AB and AC of ΔABC respectively such that LM ‖ AC and LN ‖ AB. Prove that DL^2 = DB . DC
32. Construct a triangle ABC with AB = 4.5 cm, BC = 5cm and ∟B = 45^o and then construct a triangle similar to ABC with scale factor ⅗.(Use only ruler and compass)
33. Three terms are in A.P. If their sum is 69 and product is 11799, find the terms.
34. Sum of the digits of a two digit number is 11. The number obtained by reversing the digits is 9 less than the original number. Find the number.

Section-D

35. Two jars A and B contain 80% and 70% acid solutions respectively. How much of the solution from each bottle should be taken so as to get 25 litres of 72% acid solution.
36. Using BPT prove that the bisector of an interior angle of a triangle divides the opposite side in the same ratio as the sides containing the angle.
37. A cone is cut into three parts by planes parallel to the base such that the height is trisected. Find ratio of the volumes of the three parts so obtained.
38. A plane is flying horizontally at a height of 3000√3 meters. The angle of elevation of the plane from a point on the ground is found to be 60^o. After a flight of 30 seconds the angle of elevation changes to 30^o. Find the speed of the plane.

OR

If secθ + tan θ = x, prove that sin θ = $\frac{x^2-1}{x^2+1}$

39. A piece of cloth costs Rs 400. Had the cloth been 4 m longer and the rate per meter been ₹ 5 less, the cost would have remained same. Find the length of the cloth.

OR

Solve for 'x'. : $\frac{2x}{x-4} + \frac{2x-5}{x-3} = \frac{25}{3}$

40. If the mean of the following data is 544, find the missing frequency.

Class Int	500-520	520-540	540-560	560-580	580-600	600-620
Freq	14	9	5	x	3	5

OR

Following is the height of students of a certain class. Find the median height.

Ht (cms)	160-162	163-165	166-168	169-171	172-174
No. of Students	152	118	142	127	18