



**THE LAWRENCE SCHOOL, SANAWAR
SAMPLE QUESTION PAPER FOR
ENTRANCE EXAMINATION**

**Class : XI (L-6)
Subject: Mathematics**

Max Marks: 100

Time allowed: 1 ½ Hrs.

General instructions:

1. All questions are compulsory.
2. The question paper consists of 22 questions divided into three sections A, B and C.
3. The marks are mentioned at the appropriate place in each section.

Section-A(2 marks each)

1. Form a quadratic polynomial with 4 and $-1/5$ as its zeros.
2. Find the 15th term of the A.P. : 5, 2, -1,
3. Is -151 a term of the series: -7, -5, -3,.....?
4. How many terms of the series: 48, 45, 42,..... will add up to 499 ?
5. Which term of the A.P. : 31, 26, 21,.....is the first negative term ?
6. If $5 \sin \theta = 3$ then evaluate: $\frac{\sec \theta - \tan \theta}{\sec \theta + \tan \theta}$.
7. Evaluate : $\left(\frac{\sin 47^\circ}{\cos 43^\circ}\right)^2 + \left(\frac{\cos 43^\circ}{\sin 47^\circ}\right)^2 - 2 \cos^2 45^\circ$
8. Find the point on y-axis which at a distance of 8 unites from (4, 3).
9. Find 'k' if the points (3, 4), (4, k) and (2, -3) are collinear.
10. Two dice are thrown simultaneously, find the probability of getting a sum of 9 or more.

Section B (5 marks each)

11. Solve the equation given below: $\left(\frac{4x-3}{2x+1}\right) - 10\left(\frac{2x+1}{4x-3}\right) = 3$.
12. For what values of 'k' will the given equation have equal roots: $(k+4)x^2 + (k+1)x + 1 = 0$
13. If 5 times 5th term and 10 times 10th term of an A.P. are equal then find the 16th term of the series.
14. The sum of three numbers in A.P. is 18 and the sum of their squares is 194. Find the numbers.
15. Prove that : $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \frac{1 + \sin \theta}{\cos \theta}$
16. Prove that : $\sqrt{\frac{\sec \theta - 1}{\sec \theta + 1}} + \sqrt{\frac{\sec \theta + 1}{\sec \theta - 1}} = 2 \operatorname{cosec} \theta$
17. Find in what ratio does the line $2x - 3y - 2 = 0$ divides the join of points (3, -1) & (8, 9).
18. Find the median life time of the a lamp from the data given below:

Life time in hours	150-200	200-250	250-300	300-350	350-400	400-450	450-500
No. of lamps	24	36	65	46	54	32	64

Section C (10 marks each)

19. Find all the zeros of the polynomial $2x^4 - 3x^3 - 3x^2 + 6x - 2$ given that two of its zeros are $\sqrt{2}$ & $-\sqrt{2}$.
20. A boat goes 20 km upstream and 30 km downstream in 8 hours. In 10 hours it can go 30 km upstream and 50 km downstream. Find the speed of the stream and speed of boat in still water.
21. Two pipes running together can fill a water tank in $11\frac{1}{9}$ minutes. If one pipe takes 5 minutes more than the other to fill the tank while running alone then find the time taken by each of the pipes to fill the tank.
22. As observed from the top of a lighthouse, 200m above the sea level, the angle of depression of a ship sailing directly towards it, changes from 30° to 45° in a span of 6 minutes. Find the distance traveled by the ship during this time and also the time in which it will reach at the lighthouse base.

*******BEST OF LUCK*******