



INDIAN SCHOOL DARSAIT

MID TERM EXAMINATION , SEPTEMBER , 2017

SAMPLE PAPER 1

MATHEMATICS

Class: X

Max.Marks : 80

Date :

Time : 3hrs

General instructions:

- ❖ All questions are compulsory.
- ❖ The question paper consists of 30 questions divided into 4 sections- A, B , C and D.
Section A consists of **6** questions of **1 mark** each. **Section B** consists of **6** questions of **2marks** each. **Section C** consists of **10** questions of **3marks** each. **Section D** consists of **8** questions of **4 marks** each.
- ❖ There is no overall choice in the question paper.
- ❖ Use of calculator is not permitted.

SECTION A

Questions 1 to 6 carries 1 mark.

1. If $HCF(26,169) = 13$, then find $LCM(26,169)$. 1
2. Find the value of p for which the quadratic equation $4x^2 + 8x - p = 0$ has equal real roots. 1
3. For what value of k , the following pair of linear equations had infinitely many solutions? $10x + y - (k-5) = 0$; $20x + 2y - k = 0$ 1
4. If one zero of the polynomial $f(x) = (k^2 + 4)x^2 + 13x + 4k$ is reciprocal of the other , then find the value of k. 1
5. nth term of a sequence is given by $4n^2 + 2$. Is this an A.P.? Justify. 1
6. State Basic Proportionality Theorem. 1

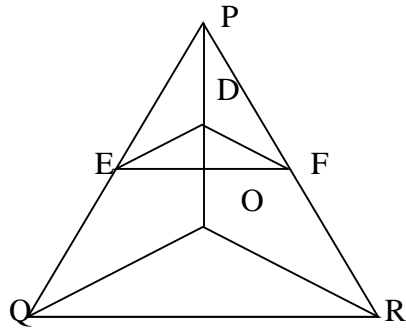
SECTION B

Questions 7 to 12 carries 2 marks

7. Check whether 6^n can end with the digit 0 . Justify your answer. 2

8. Find a quadratic polynomial for which the sum and product of the zeros are $\sqrt{2}$ and $\frac{1}{3}$ respectively. 2

9. In the figure , 2
 $DE \parallel OQ$ and $DF \parallel OR$. Show that $EF \parallel QR$.



10. Find the roots of the quadratic equation $\sqrt{2}x^2 + 7x + 5\sqrt{2} = 0$. 2
11. Find how many integers between 200 and 500 are divisible by 8. 2
12. Find the value of c for which the system $cx + 2y = 5$, $3x + y = 1$ has
 i) a unique solution and ii) no solution 2

SECTION C

Questions 13 to 22 carries 3 marks .

13. Prove that $5 - \sqrt{3}$ is irrational. 3
14. What must be subtracted from the polynomial $6x^3 + 11x^2 - 39x - 65$ so that the resulting polynomial is exactly divisible by $x^2 + x - 1$. 3
15. If the sum and product of the zeros of the polynomial $ax^2 - 5x + c$ is equal to 10 each , find the values of a and c. 3
16. For what value of 'K' will the following pair of linear equations have infinitely many solutions: $Kx + 3y = K-3$; $12x + Ky = K$. 3
17. Solve $px + qy - p + q = 0$
 $qx - py - p - q = 0$ 3
18. Find the sum of all 3-digit numbers not divisible by 9. 3
19. How many terms of the series $230 + 227 + 224 + \dots$ make a sum of 4200 3
20. If the equation $(1 + m^2)x^2 + 2mcx + (c^2 - a^2) = 0$ has equal roots , prove that $c^2 = a^2(1 + m^2)$ 3
21. Write a quadratic equations whose roots are $\frac{2+\sqrt{5}}{2}$ and $\frac{2-\sqrt{5}}{2}$ 3

22. ABCD is a trapezium in which $AB \parallel CD$ and P and Q are points on AD and BC respectively such that $PQ \parallel DC$. If $PD = 18$ cm $BQ = 35$ cm and $QC = 15$ cm, find AD 3

SECTION D
Questions 23 to 30 carries 4 marks

23. Use Euclid's Division Lemma to show that the cube of any positive integer is of the form $9m$, $9m+1$ or $9m+8$. 4
24. If 2 and -2 are two zeros of the polynomial $x^4 + x^3 - 34x^2 - 4x + 120$, find all the zeros of the given polynomial. 4
25. Simplify : $\frac{x-a}{x-b} + \frac{x-b}{x-a} = \frac{a}{b} + \frac{b}{a}$ 4
26. A philanthropist wanted to donate Rs. 8000 equally among the inmates of a destitute home. Had there been 10 children less each would have got Rs.40 more. Find the number of inmates in the destitute home. What value does the person reflect? 4
27. State and prove Basic Proportionality Theorem. 4
28. Solve for x and y 4
 $6x + 3y = 6xy$
 $2x + 4y = 5xy$
29. The sum of n terms of an A.P. is $n^2 + 3n$. Find its 20th term. 4
30. Find the number of integers between 100 and 400 which are divisible by 7. Also, find their sum. 4
