PRACTICE QUESTIONS

SUBJECT - MATHEMATICS

CLASS – XI

GENERAL INSTRUCTIONS :

1) All the questions are compulsory.
2) The question paper is divided into three sections : Section A consists of 6 questions of 1 mark each, Section B consists of 13 questions of 4 marks each and Section C consists of 7 questions of 6 marks each.
3) Use of calculator is not permitted.

SECTION A

1. Find AΔB , if A={1,3,4} and B={2,5,9,11}.
2. Find the multiplicative inverse of $\sqrt{5}$ +3i
3. Prove that $\frac{sinA+sin2A}{cosA-cos2A} = cot\frac{A}{2}$
4. Find the values of x, if the distance between two points (x,-8,4) and (3,-5,4).
5. Evaluate $\lim_{x\to 1}\frac{x^{15}-1}{x^{10}-1}$
6. Write the negation of the statement "All triangles are rectangle."

SECTION B

7. If f(x)= 1/(2x+1), x is not equal to -1/2, then find f(f(x)).
8. Prove that tan3x-tan2x-tanx=tan3x tan2x tanx
9. Solve sin2x – sin4x =0 OR Prove cosine law.
10. Prove by Mathematical Induction that n(n+1)(2n+1) is a multiple of 6 for all n belongs to natural number. OR Prove by Mathematical Induction that 3.6+6.9+9.12+...3n.(3n+3)=3n(n+1)(n+2), for all n belongs to natural number
11. Solve the equation : $x^2 + 4x + 5 = 0$
12. Find the number of chords that can be drawn through 16 points on a circle.
13. If the different permutations of the word 'EXAMINATION' are listed in a dictionary, then how many items are there in the list before the first word starting with E?
14. Find the coefficient of x^4 in the expansion of $(1 + x)^n(1 - x)^n$.
15. The 10^{th} term of an AP is 41 and 18^{th} term is 73. Find AP.
16. Find the sum of n terms of the series 1.2+2.3+3.4+...

17. Find the equation of the circle, whose centre is (2,-3) and passing through the intersection of lines 3x-2y=1 and 4x+y=27.

18. Find the derivative of (sinx +cosx)/(sinx- cosx).

19. A bag contains 5 white and 7 black balls and a man draws 4 balls at a random. What are the odds against these being all black?

SECTION C

20. In a survey of 400 movie viewers, 150 were listed as liking 'VEER ZAARA' ,100 were listed as liking 'AITRAAZ' and 75 were listed as both liking both the movies. Find how many liking neither 'AITRAAZ' nor 'VEER ZAARA'. What can you say about watching movies.

21. Prove that sinx+siny+sinz –sin(x+y+z) = 4 {sin(x+y)/2}{sin(y+z)/2}{sin(z+x)/2}

22. Reduce $\left(\frac{1}{1-4i}-\frac{2}{1+i}\right)\left(\frac{3-4i}{5+i}\right)$ to the standard form.

23. Solve the system of linear inequation graphically; 6x+5y ≤150, x+4y ≤80, x≤15, x≥0, y≥0.

24. A line perpendicular to the line segment joining the points (1,0) and (2,3) divided it in the ratio 1:n. Find the equation of the line.

25. Find the equation of the parabola, whose focus is (0,-1) and the directrix is x+y-1=0.

26. Find the variance and standard deviation for the following distribution.

x	4.5	14.5	24.5	34.5	44.5	54.5	64.5
f	1	5	12	22	17	9	4

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