CLASS XI MATHS

Practice Paper 3

**Section A**

**1 If (x-1, y+3)** = (2, x+4) then find the value of x , y.

2 Rephrase the following sentence in conditional form

“ Working hard ensures that you will pass the examination.”

3 How many three digit nos. are divisible by 7?

4 Find the length of latus rectum of the parabola y2 = - 8x

5 Write the contrapositive of the following statement

“ If a triangle is equilateral, then it is isosceles”.

6 Write the negation of the following statement

“All mathematicians are men”.

**Section B**

7 If A and B are two sets such that n(A) = 20, n(A B) = 42 and n(A B) = 4, then find n(B – A). Write a set of four life skills which you like to acquire.

8 Solve : sec22x = 1 – tan2x

9 Prove that : cosAcos(600 – A)cos(600 + A) = $\frac{1}{4}$cos3A

 OR

Prove that tanA + tan(600 + A) – tan(600 – A) = 3tan3A

10 If z1= 2 – i, z2= 1+i, then find $\frac{z1+z2+1}{z1-z2+i}$

11 On Republic Day eve, a person manufactures T-shirts with National Flag embedded on it. The cost and revenue of T-shirts is given by C(x)=20x+4000 and R(x)=60x + 2000 respectively, where x is the number of T- shirts produced and sold. How many T-shirts should be manufactured and sold to realize some profit?

12 How many six digit telephone numbers be made, if each number starts with 35 and no digit appears more than once? OR

How many words can be formed by using the letters of the word “ORIENTAL”, so that vowels always occupy the odd places?

13 Prove that $\frac{cos8Acos5A-cos12Acos9A}{sin8Acos5A+cos12Asin9A}$ = tan4A

14 Find the equation of the hyperbola having foci ($\pm 3√5,0)$ and the length of latus rectum is 8.

15 Find the equation of a line passing through the point (2,2)such that the sum of the intercept on the axes is 9. OR

Find the image of the point (- 8,12) with respect to the line mirror 4x + 7y + 13 = 0

16 Find a point on Z- axis which is equidistant from (1,5,7) and (5,1,- 4)

17 Find the coefficient of variation for the following data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | 5 | 15 | 25 | 35 | 45 | 55 |
| f | 12 | 18 | 27 | 20 | 17 | 6 |

 18 six boys and six girls sit in a row. Find the probability that all the six girls sit together. OR

A bag contains 5 red, 4 green and 3 yellow balls. Three balls are drawn out of it at random, find the probability of drawing exactly 2 red balls.

19 Find the mean deviation about median for the following data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Marks | 0-10 | 10-20 | 20-3- | 30-40 | 40-50 | 50-60 |
| No.of girls | 6 | 8 | 14 | 16 | 4 | 2 |

 **Section C**

20 In a survey of 25 students, it was found that 15had taken Maths, 12 had taken Physics and 11 had taken Chemistry; 5 had taken Maths and Chemistry, 9 had taken Maths and Physics,4 had taken Physics and Chemistry and 3 had taken all the three subjects.

i)Find the number of students that had taken none of the subjects.

ii)In your opinion , which subject is more interesting and why?

21 If sinө = 3/5 and cosɸ = - 12/13 where ө and ɸ both lie in the second quadrant, then find the value of tan(ө - ɸ ) OR

If in a triangle ABC, $\frac{a2-b2}{a2+b2}$ = $\frac{sin⁡(A-B)}{sin⁡(A+B)}$ , then prove that it is either a right angled or an isosceles triangle.

22 Prove that by using Principle of Mathematical Induction

1.3+2.32+3.33+-----------------n.3n = (2n – 1)3n+1 + 3/4$ , ∀$ n$ \in $ N

23 Solve the following system of inequations graphically

3x+2y$\leq $ 150, x+4y$\leq $ 80, x $\leq $ 15, x $\geq $ 0, y $\geq $ 0

24 Using binomial theorem, prove that 6n – 5n always leaves remainder 1 when divided by 25.

25 Find the sum of first n terms of the series 3+7+13+21+31----------

26i) Differentiate $\frac{x}{1+tanx}$ w.r.t x

Ii) Evaluate lim x→ 0 $\frac{\left(1+x\right)6-1}{\left(1+x\right)2-1}$