CLASS XI MATHS

Practice Paper 2

**Section A**

1 The runs scored by two batsmen A and B given below:

Batsman A : 28,93,0,64,42,80,30,5,118,70

Batsman B : 52,47,48,50,53,54,57,59,57,53

They have same mean score 53. Which batsmen is more consistent and dependable?

2 If f(x) = √ 1+x and g(x) = √1-x. Find (fg)(x)

3 If tan750 = 2+√3, then find tan750 + cot750

4 If tanx= 2/3 , tany = 1/5 then what is x+y?

5 Express (-√ 5 + √-3)(3 √2- i) in the form of a+ib

6 If C(n,17) = C(n,8), then find C(n,22)

**Section B**

7 a) Prove that : $\frac{cos4x+cos3x+cos2x}{sin4x+sin3x+sin2x}$ = cot3x

 b) In triangle ABC, if a=2, b=3 and sinA = 2/3 , find /B

 OR

Solve the equation : 3tanө + cot ө = 5cosec ө

8 Prove by using principle of mathematical induction for all natural numbers

1.2+ 2.22+3.23+-------------+n.2n = (n-1)2n+1 + 2

9 If U = {a,e,i,o,u}, A = {a,e,i}, B= {e,o,u} and C={a,i,u}, then verify that

 A ∩ (B – C) = (A∩B) – (A∩C)

10 Let A = {9,10,11,12,13} and let f: A→N be defined by f(n) = the highest prime factor of n. Find the range of f.

11 Find real ө such that $\frac{5+3isinQ}{1-3isinQ}$ is purely real.

12 In how many ways 4 Indians and 4 Pakistani army Generals can be seated at a round table so that no two Indian Generals may be together? If two leaders representing each country desire to sit together without any restriction on the other officers, find the number of seating arrangements? Do you find that periodic meetings between senior officers and politicians are in the interest of both the countries for keeping peace and goodwill in the region? Express your views briefly.

13 a)The common ratio of a G.P. is -4/5 and the sum to infinity is 80/9.Find the first term.

b)Insert 6 numbers between 3 and 24 such that the resulting sequence is an A.P.

 OR

Find the sum of all natural numbers lying between 100 and 1000 which are the multiples of 5

14 Find the distance between the parallel lines

l(x+y) + p =0 and l(x+y) – r = 0

 OR

Find the equation of the line perpendicular to the line x – 7y + 5 =0 and having x intercept 3.

15 Find the equation of the circle which passes through the points (1,1), (2,2) and whose radius is 1. Show that there are two such circles.

16 Find the equation of the hyperbola satisfying the given conditions:

Foci(0, +\_ √10), passing through (2,3)

 OR

Find the equation of ellipse whose vertices are (-+13,0) and foci are (-+5,0)

17Rewrite each of the following statements in the form “ p if and only if q”

1. P: If you watch television,then your mind is free and if your mind is free, then you watch television.
2. q: For you to get an grade A, it is necessary and sufficient that you do all the homework regularly.
3. r: If a quadrilateral is equiangular,then it is a rectangle and if a quadrilateral is a rectangle ,then it is equiangular.

18 A letter is chosen at random from the word “ASSASSINATION”. Find the probability that letter is i)a vowel ii) a consonant.

19 Reduce the equation of the parabola y2 – 8y – x +19=0 to standard form y2=4ax. Find its vertex and focus.

**Section C**

 20 a) Prove that : sinx+ sin2x+sin4x+sin5x = 4 cosx/2 cos3x/2 sin3x

b) Prove that : tan200 tan300 tan400 tan800 = 1

21 The mean and standard deviation of 20 observations are found to be 10 and 2, respectively. On rechecking , it was found that an observation 8 was incorrect . Calculate the correct mean and standard deviation in each of the following cases :

1. if wrong item is omitted
2. If it is replaced by 12.

 OR

i) Find the mean deviation about the mean for the data

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Xi | 10 | 30 | 50 | 70 | 90 |  |
| Fi | 4 | 24 | 28 | 16 | 8 |  |

ii)Find the mean and variance of first “n”natural numbers

22 i)Show that the middle term in the expansion of (1+x)n is 1.3.5.----(2n-1) 2nxn /n! ,where n is a positive integer.

Ii)Find the relation between r and n in order that the coefficients of the 3rd and (r+2)th terms of (1 + x)2n may be equal

 OR

 i) Using binomial expansion ,[(x+y)5+(x-y)5] and hence find the value of

[(√2+ 1)5 + (√2 – 1)5]

1. Find the term independent of x in the expansion of (3x2/2 – 1/3x)6

23 i) Find $\lim\_{x\to 1}f(x)$ where f(x) = $\left[\begin{matrix}x+2&x\ne 1\\0&x=1\end{matrix}\right]$

ii)Find the derivative of $ \frac{x+cosx}{tanx}$

24 i) Solve the following system of inequalities graphically :

X + y ≥ 5, x – y ≤ 3

ii)A milkman has 80% milk in his stock of 800 litres of adulterated milk. How much 100% pure milk is to be added to it so that the purity is between 90% and 95%.

What should be done to stop adulteration in foods?

25 i)Let f be the subset of ZxZ defined by f = {(ab,a+b):a,b Z}.Is f a function from Z to Z? Justify your answer.

ii)Draw the graph of the function f : R → R defined by

f(x) = $\begin{matrix}1&x>0\\0&x=0\\-1&x<0\end{matrix}$

26i)Find the sum to n terms of the series 1x2x3 +2x3x4 +3x4x5--------

ii)The sum of some terms of G.P. is 315 whose first term and the common ratio are 5 and 2 respectively. Find the last term and the no. of terms.