Sample Paper – 2007
Class – X
Mathematics

- GENERAL INSTRUCTIONS:
- All questions are compulsory.
- The question paper consists of 25 questions divided in to three sections-A, B and C. section A contains 7 questions of 2 marks each. Section B is of 12 questions of 3 marks each and section C is of 6 questions of 5 marks each.
- There is no overall choice. However internal choice has been provided in two questions of two marks each, two questions of three marks each and two questions of five marks each.
- In question on theorems, the drawing should be neat and exactly as per the given measurements.
- Use of calculator is not permitted.

SECTION.A

1) Solve $a(x+y)+b(x-y)=a^2-ab+b^2$
$a(x+y)-b(x-y)= a^2+ab+b^2$

2)If P=(1+2x)/1-2x and Q=(1-2x)/1+2x,find P+Q/P-Q

3)Solve for x: $x/(x+1) + (x+1)/x = 34/15$ $(x\neq 0, x\neq -1)$

4) If m times the mth term of an AP is equal to n times its nth term. Show that the (m+n)th term of the AP is zero.

Or

Which term of the AP,3,15,27,…will be 132 more than its 54^{th} term

5) A suit is available for Rs.1500 cash or Rs.500 cashdown payment followed by 3 monthly instalment of 345 each. Find the rate of interest charged under istalment scheme.

6)Two circles intersect in A and B and AC and AD are respectively the diameter of the circle.Prove that C,B,D are collinear.

7)Two dice are thrown.Find the probability of getting
(i) total of atleast 10
(ii) the sum as a prime number.

Or

Find the probability that a leap year selected at random will contain 53 Sundays.

SECTION.B

8) Solve graphically x-y-1=0 and 2x + y – 8 =0.Shade the area bounded by these two lines and y axis. Also determine the area.

9) If (x^2+x-2) is the G.C.D of the expression $(x-1)(2x^2+ax+2)$ and $(x+2)(3x^2+bx+1)$.Find the value of a and b.

10) Find four numbers in AP whose sum is 20 and sum of whose square is 120.

11) A dealer sells a toy for Rs.24 and gains as much percent as the cost price of the toy.Find the cost price of the toy.

Or

A shopkeeper buys a number of books for Rs 80.If he had bought 4 more books for the same amount ,each book would have cost Re 1 less.How many books did he buy.

12) Construct a quadrilateral ABCD with AB = 5.5 cm,AD=3.5 cm,BD=4.5cm,$\angle$B=130º and BC=4cm.Construct a quadrilateral with its sides (4/7)th of the corresponding sides of ABCD.

13) Two poles of height a metres and b metres are p metres apart.Find the height of the point of intersection of the lines joining the top of each pole to the foot of the opposite pole is given by ab/(a+b).

14) A car is available for Rs.402200 cash or Rs 150000 cash down payment and three equal half yearly instalments.If the interest is charged at the rate of 10% p.a compounded half yearly ,find the value of each instalment.

15) Prove that $\frac{\cos A}{1-\tan A} + \frac{\sin A}{1-\cot A} = \cos A+\sin A$

or

Without using trigonometric tables evaluate

$$\frac{\sec\theta\,\text{cosec}(90-\theta) - \tan\theta\cot(90-\theta)+\sin^2 55^\circ+\sin^2 35^\circ}{\tan 10^\circ.\tan 20^\circ.\tan 60^\circ.\tan 70^\circ.\tan 80^\circ}$$

16) The diameter of a metallic sphere is 6cm.The sphere is melted and drawn into a wire of uniform cross section.If the length of the wire is 36 cm,find its radius.

17)Draw a Pie diagram for the following data of expenditure pattern in a family.

Items	Food	Clothing	Rent	Education	Miscellaneous
Expenditure	4000	2000	1500	1500	1000

18) Prove that the point (-3,0),(1,-3) and (4,1) are the vertices of an isosceles right triangle .Find the area of this triangle.

19) Find the ratio in which the point (-3,p) divides the line segment joining the points (-5,-4) and (-2,-3)Hence find the value of p.

SECTION C

20) Shikha gets monthly salary of Rs43000.She contributes Rs 6000 per month to CPF ans Rs 34000 per year towards PPF.She also invests Rs 20000 in NSC.She contributes Rs 11000 PM's relief fund and donates Rs 5000 to the college where she studied getting a relief on 100% and 50% 0f the donations respectively.Calculate the income tax paid by Shikha in the last month of the year if the deduction is made from her salary for tha last 11 months at at the rate of 800 per month.

21) The angle of elevation of a cloud from a point 60m above a lake is 30º and the angle of depression of the reflection of the cloud in the lake is 60º.

Find the height of the cloud.

Or

At a point on the level ground the angle of elevation of a vertical tower is found to be such that its tangent is 5/12.On walking 192m towards the tower the tangent of angle of elevation is ¾.Find the height of the tower.

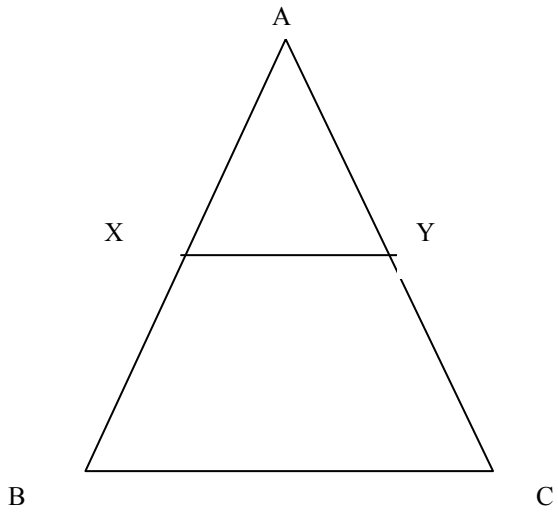
22)Find the mean marks of the students from the following cumulative frequency distribution .

Marks	Number of students
0 and above	80
10 and above	77
20 and above	72
30 and above	65
40 and above	55
50 and above	43
60 and above	28
70 and above	16
80 and above	10
90 and above	8
100 and above	0

23) A bucket is in the form of a frustum of a cone and holds 28.490 liters of water. The radii of the top and bottom are 28cm and 21 cm respectively .Find the height of the bucket. Also find its surface area.

24) If a line is drawn parallel to one side of a triangle the other two sides are divided in the same ratio. Prove the above statement and use it to prove the following

In the figure XY // BC,AX=1cm,BC 6cm and BX=3cm. Find the length of XY



or

State and prove the Pythagoras Theorem. Using the above,determine whether the triangle having sides (a-1)cm., 2√a cm. and (1+a)cm. is a right angled triangle

25) Prove that the degree measure of an arc of a circle is twice the angle subtended by it at any point of the alternate segment of the circle with respect to the arc.By using this result find the value of x.