Sample paper-2007
Class - X
Subject - Maths

M M-80 **Time- 3Hrs**

General Instructions

i) **All questions are compulsory**

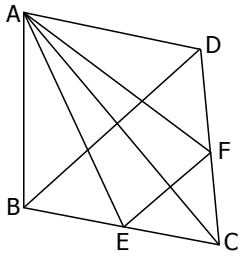
ii) **The question paper consists of 25 questions divided into three sections A, B, and C. Section A contains 7 questions of 2 marks each, section B is of 12 questions of 3 marks each and section C is of 6 questions of 5 marks each**.

SECTION - A

1. Solve the following system of equations: $1/2x - 1/y = -1$; $1/x + 1/y = 8$; $x \neq 0$ & $y \neq 0$.

   OR

   Solve for x and y: $a^2x + b^2y = c^2$; $b^2x + a^2y = d^2$.
2. The HCF and LCM of two polynomials p(x) and q(x) are $5(x+3)(x-3)$ and $20x(x^2-9)(x^2-3x+2)$ respectively. If $p(x) = 10(x^2-9)(x-1)$, find q(x).
3. Solve the following quadratic equation for x: $abx^2-(b^2-ac)x-bc=0$.
4. If the 10^{th} term of an A.P is 52 and 16^{th} term is 82, find the A.P. and its 32^{nd} term.
5. A T.V. is sold for Rs.12500 cash or for Rs.4500 cash down payment followed by 11 monthly instalments of Rs.800 each. What rate of interest does the buyer pay?
6. In the given figure ABCD is a quadrilateral with AB = AD. AE and AF are respectively bisectors of $\angle$ BAC and $\angle$ DAC . Prove that EF || BD.



OR .

If two non-parallel sides of a trapezium are equal, prove that it is cyclic.

7. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball, find the number of blue balls in the bag.

SECTION – B

8. Solve the following system of linear equations graphically; $2x-3y-h=0$; $3x+4y+1=0$.
9. Express the following expression as a rational expression in lowest terms.

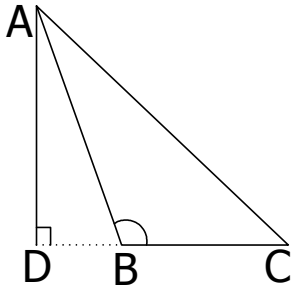
   $\{(x-y) + y^2/(x+y)\} \div \{(x^2+y^2)+ y^4/(x^2-y^2)\}$

10. Find the present value of Rs.14045 due 1 year hence at 12% per annum, compounded half-yearly.
11. How many numbers of two digit are divisible by 7.

    OR

    Find the 10^{th} term of the A.P: 1, 4, 7, 10, -------.

12. In how many annual instalments of Rs.140608 each a sum of Rs 390200 can be paid back, if the rate of interest charged is 4% per annum compounded annually.
13. Triangle ABC is an obtuse triangle, obtuse angled at B. If AD⊥ CB, prove that $AC^2 = AB^2 + BC^2 + 2BC.BD$.



14. Construct a triangle ABC in which AB=6cm, AC = 5.5cm and m $\angle$ B=60^0 . Draw the circumcircle of the triangle.
15. Show that: $(\text{cosec}\,\theta - \sin\theta)(\sec\theta - \cos\theta)(\tan\theta - \cot\theta) = 1$.

OR

If A, B, C are the interior angles of a triangle ABC, show that $\sin (B+C)/2 = \cos A/2$.

16. If the distance of P(x,y) from A(5,1) and B(-1,5) are equal, prove that 3x = 2y.
17. A cone is 8.4 cm high and the radius of its base is 2.1 cm. It is melted and recast into a sphere. Find the radius of the sphere.
18. Find the coordinates of the point which divides the line segment joining the points (3, 5) and (7, 9) internally in the ratio of 2:3.
19. In the month of July, 2002 a householder spent his monthly salary amounting to Rs.7200 on different items as given below.

Items	**Amount Spent (in Rs.)**
Clothing	600
Food	4000
House Rent	1200
Education	400
Miscellaneous	1000

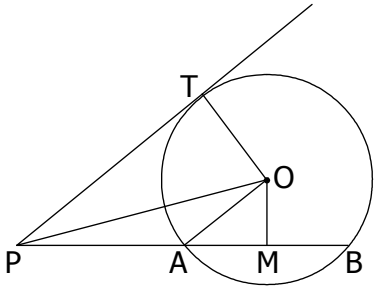
Represent the information in the form of a pie chart.

SECTION-C

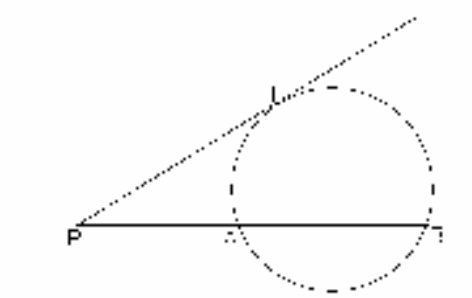
20. ABC is an isosceles triangle with AB = AC and D is a point on AC such that BC2 = AC × CD. Prove that BD = BC.

OR

If PAB is a secant to a circle intersecting it at A and B, and PT is a tangent, then PA. PB = PT^2.



21. If PAB is a secant to a circle intersecting it at A and B and PT is a tangent, then PA x PB =PT^2. Using the above Theorem, find PA, if PT=6cm, and AB =5cm.



22. If the mean of the following frequency distribution is 50, find the missing frequencies f_1 and f_2.

Classes	0-20	20-40	40-60	60-80	80-100	Total
Frequency	17	f_1	32	f_2	19	120

23. A fire in a building B is represented on telephone to two fire stations P and Q, 20km apart from each other on a straight road. P observes that the fire is at an angle of 600 to the road and Q observes that it is at an angle of 450 to the road. Which station should sent its team and how much will this team have to travel.

24. The total annual income of Naresh is Rs.165000 exclusive of HRA. He contributes Rs.4000 per month towards his providend fund and pays Rs. 6000 as a annual premium for his life insurance policy. Calculate the income tax payable by Naresh in the financial year.
    Use the following to calculate income tax:
    a) Savings: 100% exemption for permissible savings up to Rs.100000.
    b) Rate of income tax:

Slab	Rate of income Tax
i) Up to Rs.100000	No Tax
ii) From Rs.100001 to Rs.150000	10% of income exceeding Rs.100000
iii) From Rs.150001 to Rs.250000	Rs.5000 +20% of income exceeding Rs.150000
iv) Above Rs.250000	Rs.25000 +30% of income exceeding Rs.250000

    c) Surcharge: 10% of the income tax if the taxable income is above Rs.1000000.
    d) Education cess: 2% of income tax.