Sample paper-2007
Class - X
Subject - Maths

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

General Instructions

i) **All questions are compulsory**

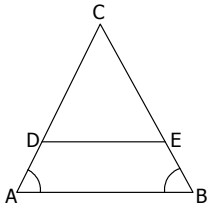
ii) **The question paper consists of 25 questions divided into three sections A, B, and C. Section A contains 7 questions of 2 marks each, section B is of 12 questions of 3 marks each and section C is of 6 questions of 5 marks each**.

SECTION - A

1. Solve the following system of equations: $2y = 4x - 6$; $2x = y + 3$

   OR

   Solve for x and y: $ax + by = a^2$; $bx + ay = b^2$.
2. If the HCF of the polynomials $p(x) = x^2-5x+6$ and $q(x) = x^2+4x-12$ is x-2, find the LCM of these polynomials.
3. Solve the following quadratic equation for x: $ax^2-2abx = 0$.
4. The common difference of an AP is –2. Find its sum, if its first term is 100 and the last term is –10.
5. An electric iron is available for Rs.650 cash or for Rs.250 cash down payment together with Rs410 to be paid after two month. Find the rate of interest charged under this scheme.
6. In the given figure $\angle A = \angle B$ and AD = BE. Prove that DE || AB.



OR .

If the area of two triangles are equal, prove that they are congruent.

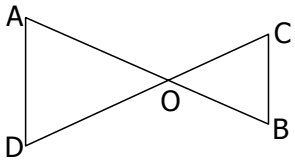
7. A bag contains 3 red and 2 blue marbles. A marble is drawn at random. What is the probability of drawing a blue marble.

SECTION – B

8. Solve the following system of linear equations graphically; x-4y+14=0 ; 3x+2y-14=0.
   Simplify : $[(x+1)/(x-1)] – [(x-1)/(x+1)] – [4x/(x^2+1)]$
9. A room heater is sold for Rs.440 cash or for Rs.200 cash down payment together with Rs.244 to be paid after one month. Find the rate of interest charged in the instalment scheme.
10. What is the probability that an ordinary year has 53 Sundays.

    OR

    The 10^{th} and 18^{th} terms of an A.P are 41 and 73 respectively. Find 26^{th} term.
11. In how many annual instalments of Rs.4232 each, a loan of Rs.6880 can be paid back if the interest charged is 15% per annum compounded annually.
12. The diagonal BD of a parallelogram ABCD intersects the line segment AE at the point F, where E is any point on side BC. Prove that $DF \times EF = FB \times FA$.



13. Construct the incircle of a triangle whose sides are 5cm, 12cm and 13cm and measure its radius.
14. Simplify : $(\sec\theta + \tan\theta)(1 - \sin\theta)$

OR

Find θ is $\sin(\theta + 36^0) = \cos\theta$, where $\theta + 36^0$ is an acute angle.

15. Find the value of k, if the point P(0,2) is equidistance from (3,k) and (k,5).
16. A copper rod of diameter 1cm and length 8cm is drawn into a wire of length 18m of uniform thickness. Find the thickness of the wire.
17. If A and B are (1,4) and (5,2) respectively, find the coordinate of P when AP/PB=3/4.
18. The percentage of various categories of workers in a state are given in the following table. Present the information in the form of a pie chart.

Category of Workers	**%**
Cultivators	40
Agricultural Laborers	25
Industrial Workers	12.5
Common	400
Miscellaneous	1000

Represent the information in the form of a pie chart.

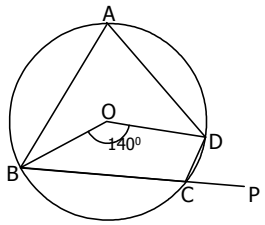
19. It is known that a box of 600 electric bulbs contains 12 defective bulbs. One bulb is taken out at random from this box. What is the probability that it is a non-defective bulb?

SECTION-C

20. In an isosceles Δ ABC, the base is produced both the ways to P and Q such that $AP \times BQ = AC^2$. Prove that Δ APC ~ Δ BCQ.

OR

In the fig. O is the center of the circle. The angle subtended by the arc BCD at the center is 1400. BC is produced to P. Determine ∠BAD and ∠DCB.



21. The diagonals of a cyclic quadrilateral are at right angles. Prove that the perpendicular from the point of their intersection on any side when produced backward bisects the opposite side.

22. The following table gives weekly wages in rupees of workers in a certain commercial organization. The frequency of class 49-52 is missing. It is known that the mean frequency distribution is 47.2. Find the missing frequency.

Weekly Wages (Rs.)	40-43	43-46	46-49	49-52	52-55
Number of	31	58	60	?	27

workers					

23. The angle of elevation of a cloud from a point 60m above a lake is 300 and the angle of depression of the reflection of cloud in the lake is 600. Find the height of the cloud.

24. The radii of the bases of two right circular solid cones of same height are r_1 and r_2 respectively. The cones are melted and recast into a solid sphere of radius R. Show that the height of each cone is given by $h = 4R^3/[r_1^3 + r_2^3]$

25. The annual income statement of Dr. Gautam, a Reader is given below:

1. Basic Pay Rs.1,62,000
2. Dearness Allowance Rs.19,440
3. House rent Allowance Rs.48,600
4. City Compensatory Allowance Rs.3,600
5. Deductions
   - (i) Contribution to Provident fund Rs.40,000
   - (ii) Group Insurance Premium Rs.1,440
   - (iii) LIC Premium Rs.12,000
   - (iv) Tax Deducted at source Rs.20,000

If Dr. Gautam has self-occupied house, find his taxable income and the balance of the income tax, he is still to pay.