



**Shri Vile Parle Kelavani Mandal's**  
**C.N.M. SCHOOL & N. D. PAREKH PRE-PRIMARY SCHOOL**  
**Second Prelims 2007-2008**  
*Theexampapers.com*  
**Subject: MATHEMATICS**

**Max Marks: 80**

**Std: X**

**Date:**

**Time: 2<sup>1</sup>/<sub>2</sub> Hrs.**

*This paper consists of 7 printed pages.*

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***Answer to this Paper must be written on the paper provided separately.***

*You will not be allowed to write during the first 15 minutes.*

*This time is to be spent in reading the question paper.*

*The time given at the head of this Paper is the time allowed for writing the answer.*

*This paper has II sections. You are to answer 4 questions from section A and any four questions from Section B. The intended marks for questions are given in brackets [].*

*All working, including rough work must be shown and must be shown on the same sheet as the rest of the answers. Omission of essential working will result in loss of marks.*

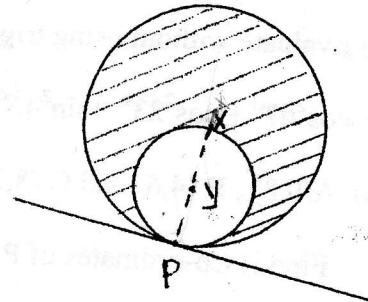
*For Std X Mathematical tables are provided.*

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**SECTION A**

**Question 1**

- a) In how many years will Rs.5000 at 12%p.a. compound interest amount to Rs.6272? [3]
- b) Two circles with centres X and Y touch internally at a point P .XP is 14 cm and XY is 3.5 cm. Find the area of the shaded portion. [3]



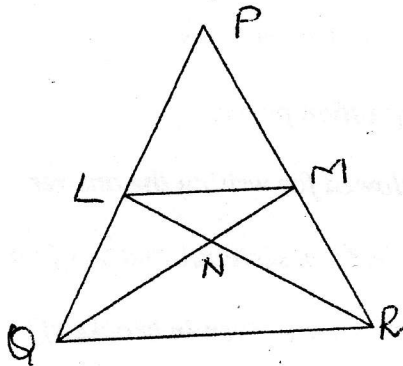
- c) Solve for  $x$  given that  $\frac{x+3}{2x+3} = \frac{x+1}{3x+2}$  [4]  
 [Leave the answer in radicals]

**Question 2**

- a) Solve the following inequation and graph the solution on a number line [3]  
 $2x - 5 \leq 5x + 4 < 19; x \in \mathbb{R}$

- b) In the given figure  $LM \parallel QR$  and  $PL : LQ = 5 : 4$  [3]

Find ar  $\triangle LMN$   
 ar  $\triangle QNR$



- c) The marks obtained by 102 students in a class test of maximum 50 marks is given in a tabular form. Given that assumed mean  $A=25$ , use the short-cut method to find the mean marks. (correct up to 2 decimal places) [4]

Marks	15	20	22	24	25	30	33	38	45
No of students	5	8	11	20	23	18	13	3	1

**Question 3**

- a) Evaluate without using trigonometric tables [3]

$$\cos^2 67^\circ + \cos^2 23^\circ + \sin^2 45^\circ + \sin^2 30^\circ$$

- b)  $A(0,8)$ ,  $B(4,6)$  and  $C(8,2)$  are vertices of a triangle  $ABC$  and  $AP$  is a median. [3]

Find i) Co-ordinates of  $P$

- ii)  $P'$  given that it is the image of  $P$  formed in the  $X$  axis
- iii)  $P''$  given that it is the image of  $P$  formed in the  $Y$  axis
- iv)  $P'''$  given that it is the image of  $P$  formed in the Origin

c) A man purchased 360 shares of face value Rs.25 paying a dividend of 12%p.a. He sold them at a profit of Rs.15 each and invested the returns in 10% Rs.50 shares bought at Rs.60. Find the difference in his annual income. [4]

**Question 4**

a)  $A$  and  $B$  are fixed points 5 cm apart. Locus of  $P$  is given by  $AP = 4$  cm and  $Q$  by  $BQ = 3.5$  cm. Construct the loci of  $P$  and  $Q$ , locate the points common to both. How many such points are there? [3]

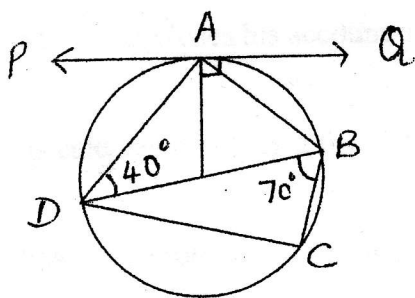
b) Given the set of real numbers as follows  $f(x) = x^2 - 2; x \in \mathbb{R}$

i) find  $f(3) - \frac{1}{2}f(-4)$  [3]

c) In the given figure  $PQ$  is the tangent to the circle at  $A$ .  $BD$  is the diameter [4]

If  $\angle ADB = 40^\circ$  and  $\angle CBD = 70^\circ$ , calculate

- i)  $\angle QAB$
- ii)  $\angle PAD$
- iii)  $\angle CDB$



## SECTION B

### Question 5

a) If the polynomials  $2x^3+ax^2+3x-5$  and  $x^2+x^3+a-2x$  leave the same remainder when divided by  $(x-2)$ , find the value of 'a' and the remainder in each case [4]

b) During the last financial year the income of Mrs.Almeida was as follows ;

**Income:** Basic salary Rs.20000.00 per month. Dearness allowance Rs 14500.00 per month..Interest from Bank Rs.1,73000.00.

.Income from equity investments Rs.213000.00

**Savings:** Contribution towards provident fund 15% of basic Salary.

Premium towards Life Insurance Rs 2400 per month

Contribution to PPF RS.50000.00

Contribution to N S C Rs 23000.00

**Donation:** To Prime Minister's Relief fund (Eligible for 100% exemption)= RS 13000.00

To Charitable institutions (eligible for 50% exemption) =Rs 15000.00

Calculate the Tax to be paid by Mrs.Almeida if she has already paid advance tax of Rs.8000 for 11 months

<b>Tax Slab:</b> Upto Rs 100000	nil ;
For women upto Rs 145000	nil
Rs.100000 to 150000	10%.
Rs.150000 to 200000	20%
Rs200000 and above	30%

**Deduction** on savings upto Rs.100000.00

Educational Cess 2% on total tax

[6]

**Question 6**

a) The circle C is of radius 2cm and the centre is at a distance of 4cm from a line AB.

The point P on AB is 5 cm from C. Construct a circle M such that it touches P and the previous circle externally. [5]

b) Show that the points (0,0), (5,5) and (-5,5) form a right isosceles triangle. [5]

**Question 7**

a) A page from Mr. Sajjan's Passbook is given:

Date	Particulars	Debit Rs.P	Credit Rs.P	Balance Rs.P
2/10/06	B/F		-	6000.00
8/11/06	By cash		8000.00	14000.00
9/12/06	By cash		8000.00	22000.00
20/12/06	To cheque 2313	9000.00	----	13000.00
23/01/07	By cash		6500.00	19500.00
13/02/07	By cash		7500.00	27000.00
22/02/07	To cheque 2314	19000.00	----	8000.00
06/03/07	By cash		5000.00	13000.00
05/04/07	By cash		11000.00	24000.00
14/04/07	By cash		7000.00	31000.00
28/05/07	By cash		6000.00	37000.00
12/06/07	By cash		8000.00	45000.00

Mr. Sajjan closes his account on 27/06/07. Calculate the amount he will receive if interest

is calculated at 6%p.a from October to June. [5]

b) A rectangular plot of area 420sq.m retains the same area if the length is increased by

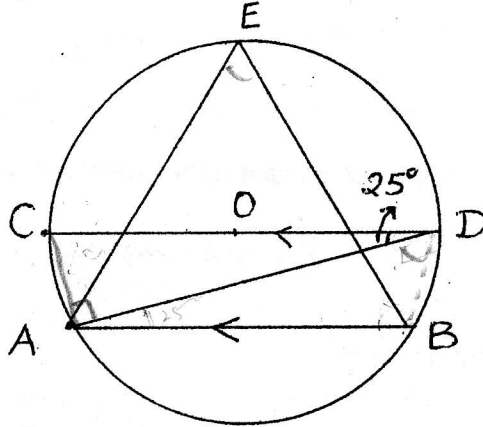
7m and the breadth decreased by 5m. Find the original dimensions of the plot. [5]

**Question 8**

a) In the given figure,  $AB \parallel CD$  and  $O$  is the centre of the circle. If

$\angle ADC = 25^\circ$ , find  $\angle AEB$  with reasons

[5]



b) If  $A = \begin{pmatrix} 3 & -5 \\ -4 & 2 \end{pmatrix}$ , show that  $A^2 - 5A - 14I = 0$

[5]

**Question 9**

a) A shop offers 25% discount on account of New Year. If you buy two shirts marked at Rs.400 each, what will be your final bill given that sales tax @ 8% is chargeable? [3]

b) Lines represented by  $3x + 4y = 8$  and  $px + 2y = 7$  are parallel.

Find the value of 'p'.

[3]

c) From the top of a watch tower 500 metre tall the angles of depression of two cars was  $45^\circ$  and  $30^\circ$  respectively. Find the distance between the cars if

i) both cars are on the same side of the watch tower

ii) both cars are on the opposite sides of the watch tower

[4]

Given that  $\sqrt{3} = 1.73$

### Question 10

- a) The surface area of a metal sphere is  $2464\text{cm}^2$ . It is recast into smaller spheres of radii 2cm. How many such small spheres will be obtained? [3]
- b) Prove that  $\frac{\sin \theta - 2 \sin^3 \theta}{2 \cos^3 \theta - \cos \theta} = \tan \theta$  [3]
- c) Draw a less than Ogive and determine the upper, lower quartiles and median for the following data [4]

Marks	11-16	16-21	21-26	26-31	31-36	36-41	41-46	46-51	51-56	56-61
No of students	04	07	12	15	17	24	19	11	08	03

### Question 11

- a) Find the maturity value of a recurring deposit of Rs.140 for 15 months @ 9% p.a. paid on monthly balance [3]
- b) Given that  $a : b = c : d$  prove that  $a+b : c+d = \sqrt{a^2 + b^2} : \sqrt{c^2 + d^2}$  [3]
- c) The daily wages earned by 30 workers in a factory is as follows [4]

Daily wages (in Rs)	0-10	10-20	20-30	30-40	40-50	50-60
No of workers	01	08	10	05	04	02

Estimate the modal wages by graphical method.

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