



DHIRUBHAI AMBANI
INTERNATIONAL SCHOOL

PRELIMINARY EXAMINATION 2012-2013

Subject : Mathematics

Date : January 9 , 2013

Std : X A

Time: 2 hrs.30mins
(plus 15mins. reading time)

Marks: 80

General Instructions:

- All questions must be answered on the separate answer booklet provided.
- This paper consists of two sections.
- Attempt all questions from section A and any four from section B.
- This paper consists of 11 questions on 7 pages.
- The intended marks for the questions or part of questions are given in brackets. []

Section A [40 Marks]

Attempt all questions

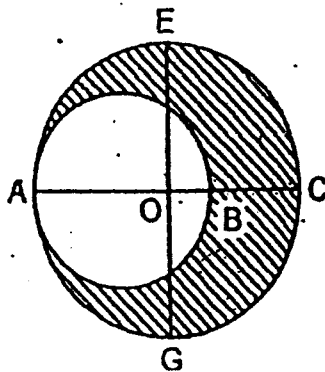
Question 1

- (a) Solve the inequation and represent the solution set on the number line. [3]

$$-3 + x \leq \frac{8x}{3} + 2 \leq \frac{14}{3} + 2x, \text{ where } x \in \mathbb{Z}$$

- (b) The function $f(x) = 2x^3 + ax^2 - bx + 3$ has a factor $(x + 3)$. When $f(x)$ is divided by $(x - 2)$, the remainder is 15, find the value of a and b . Hence factorize $f(x)$ completely. [3]

- (c) 'O' is the centre of the larger circle and AC is its diameter. Another circle with AB as diameter is drawn. If $AC = 54\text{cm}$ and $BC = 10\text{cm}$, find the area of the shaded region. [4]





Question 2

- (a) Without using trigonometrical table evaluate the following. [3]

$$\frac{\sec 17}{\csc 73} + \frac{\tan 68}{\cot 22} + \cos^2 44 + \cos^2 46 - \sqrt{2} \sin 45$$
- (b) Tanya opened a recurring deposit scheme depositing certain monthly installment for 1 year, which earns interest at the rate of 10% p.a. After one year she got ₹ 3162.50 as maturity value. Find the monthly installment. [3]
- (c) A certain sum of money invested at compound interest, amounts to ₹ 2420 and ₹ 2662 at the end of second year and third year respectively. Find (i) the rate of interest (ii) the sum lent out. [4]

Question 3

- (a) The marked price of a cycle is ₹ 2500. The shopkeeper allows a discount of 8% on the marked price and charges sales tax. If the price of the cycle, inclusive of sales tax is ₹ 2438, find the rate of sales tax. [3]
- (b) Two dice, one blue and the other grey, are thrown at the same time. What is the probability that the sum of the two numbers appearing on the top of the dice is (i) 8 (ii) 13 (iii) less than or equal to 12 [3]
- (c) Two parallel chords of a circle are 10cm and 24cm long. The chords are on the same side of the centre and the distance between them is 7cm. Find the radius of the circle. [4]

Question 4

- (a) If $\begin{pmatrix} 2 & 3 \\ -4 & 0 \end{pmatrix} \begin{pmatrix} x & 1 \\ y & 1 \end{pmatrix} = \begin{pmatrix} 4 & z \\ -3 & -4 \end{pmatrix}$ then, find the value of x, y, z [3]
- (b) Construct ΔABC such that $BC = 4\text{cm}$, $\angle B = 75^\circ$, $CA = 6\text{cm}$. Locate a point P such that $PB = PC$ and P is equidistant from the sides BC and BA. Measure and write PA. [3]

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