Class 11   Time : 1 hr.
24-7-2014   First Unit Test in MATHEMATICS   M. Marks : 20

GENERAL INSTRUCTIONS:
1. Attempt all the questions.
2. Section- A consists of 4 questions of 1 mark each.
3. Section-B consists of 6 questions of 2 marks each.
4. Section- C consists of 2 questions of 3 marks each.

SECTION - A

1. Find the solution of: $3x - 7 > 5x - 1$, for real x.

2. Change into degree: $\left(\dfrac{1}{4}\right)^{c}$.

3. Find $\cos\theta$; if $\sin\theta = \dfrac{-2\sqrt{6}}{5}$ and θ in IIIrd quadrant.

4. Evaluate: $\tan(225^0).\cot(405^0) + \tan(765^0).\cot(675^0)$

SECTION - B

5. In an experiment, a solution of hydrochloric acid is to be kept between 30^0 and 35^0 Celsius. What is the range of temperature in degree Fahrenheit, if $C = \dfrac{5}{9}$ (F-32), where C and F are the temperatures in degree and Fahrenheit respectively.

6. Solve the following system of linear in equation for real x: $\dfrac{5x+8}{4-x} < 2$.

7. Prove the following using mathematical induction,
$$\dfrac{1}{2} + \dfrac{1}{4} + \dfrac{1}{8} + \ldots\ldots + \dfrac{1}{2^n} = 1 - \dfrac{1}{2^n} \qquad \forall\, n \in N$$

8. Prove the following using mathematical induction:
$(2n + 7) < (n + 3)^2.\ \forall\, n \in N$

9. The radius of a circle is 30cm. Find the length of the arc of this circle, if the length of the chord of this arc is 30cm.

SECTION - C

10. Prove that : $\sec\left(\dfrac{3\pi}{2} - \theta\right)\sec\left(\theta - \dfrac{5\pi}{2}\right) + \tan\left(\dfrac{5\pi}{2} + \theta\right)\tan\left(\theta - \dfrac{3\pi}{2}\right) = -1$.

11. Find the solution graphically: $x + y \le 9,\quad y > x,\quad x \ge 0$.

-x-x-x-x-x-