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**MODEL PAPER 02 FOR FA – 1 (2016 – 17)**  
**CLASS – X**  
**MATHEMATICS**

**T.T. 1:30**

**M.M. 40**

**General Instructions:**

1. All questions are compulsory.
2. Question paper is divided into four sections: Section A contains 4 questions each carry 1 mark, Section B contains 4 questions each carry 2 marks, Section C contains 4 questions each carry 3 marks and Section D contains 4 questions each carry 4 marks.

**SECTION – A(1 marks each)**

1. Given that  $HCF(306, 657) = 9$ , find  $LCM(306, 657)$ .
2. Using comparing the ratios of coefficient, find out whether the pair of linear equations are consistent, or inconsistent :  $2x + 3y = 5$  ;  $4x + 6y = 7$
3. For which value of  $k$  will the following pair of linear equations have no solution?  
 $3x + y = 1$  and  $(2k - 1)x + (k - 1)y = 2k + 1$
4. Find a quadratic polynomial, the sum and product of whose zeroes are  $-2$  and  $-3$  respectively.

**SECTION – B(2 marks each)**

5. 96 defective pens are accidentally mixed with 105 good pens (a) What is LCM of 96 and 105? (b) the shopkeeper draws a pen and finds it to be defective. The shopkeeper did not sell and kept the pen aside. Which value is shown by the shopkeeper?
6. Solve :  $x + y = 15$  and  $2x - 3y = 4$
7. Use Euclid's division algorithm to find the HCF of 867 and 255
8. Ajay and Chetan donate 3 pens and 2 books each to poor children respectively. Find a quadratic polynomial whose zeroes are 3 and 2. Which values depicted from this?

**SECTION – C(3 marks each)**

9. Find the zeroes of the quadratic polynomial  $3x^2 - x - 4$  and verify the relationship between the zeroes and the coefficients.
10. Solve :  $(a - b)x + (a + b)y = a^2 - 2ab - b^2$   
 $(a + b)(x + y) = a^2 + b^2$
11. If the zeroes of the polynomial  $x^3 - 3x^2 + x + 1$  are  $a - b, a, a + b$ , find  $a$  and  $b$ .
12. Prove that  $5 + 3\sqrt{2}$  is an irrational number.

**SECTION – D(4 marks each)**

- 13.** Draw the graphs of the equations  $5x - y = 5$  and  $3x - y = 3$ . Determine the co-ordinates of the vertices of the triangle formed by these lines and the y axis.
- 14.** A boat goes 30 km upstream and 44 km downstream in 10 hours. In 13 hours, it can go 40 km upstream and 55 km down-stream. Determine the speed of the stream and that of the boat in still water. Which speed you prefer while driving in a boat and why?
- 15.** Use Euclid's division lemma to show that the square of any positive integer is either of the form  $3m$  or  $3m + 1$  for some integer  $m$ .
- 16.** Find all the zeroes of  $2x^4 - 3x^3 - 3x^2 + 6x - 2$ , if you know that two of its zeroes are  $\sqrt{2}$  and  $-\sqrt{2}$ .
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