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Roll No. :

**THIRD TERM UNIT TEST - 2014-15**

**SUBJECT - MATHEMATICS**

**CLASS - XI**

**Time : 1½ Hrs.**

**M.M. 40**

**SECTION A (1 MARK)**

1. Find distance between points  $(-1,3,-4)$  &  $(1,-3,4)$
2. Evaluate :  $\lim_{x \rightarrow 0} \frac{\sin ax}{bx}$
3. A coin is tossed & a die is thrown. Write Sample space.
4. Evaluate :  $\lim_{x \rightarrow -1} \frac{x^{10} + x^5 + 1}{x - 1}$

**SECTION B (4 MARKS EACH)**

5. Find the equation of set of points P, the sum of whose distances from A  $(4,0,0)$  & B  $(-4,0,0)$  is equal to 10.
6. Find 'Co-ordinates of a point on y-axis which are at a distance of  $5\sqrt{2}$  from the point P  $(3,-2,5)$
7. Two dice are thrown & events A,B & C are as follow :  
A : getting an even no. on the first die  
B : getting an odd no. on the second die  
C : getting the sum of numbers on dice  $\leq 5$

**[P.T.O.]**



Describe the events

- (i) A but not C
  - (ii) B or C
  - (iii)  $A \cap B' \cap C'$
8. ✓ Verify that  $(-1, 2, 1)$ ,  $(1, -2, 5)$ ,  $(4, -7, 8)$  &  $(2, -3, 4)$  are the vertices of a parallelogram.
9. ✓ A letter is chosen at random from the word ASSASSINATION. Find the probability that letter is :  
(i) a vowel (ii) a consonant
10. ✓ Evaluate :  $\lim_{x \rightarrow 0} \frac{\sin ax + bx}{ax + \sin bx}$   $a, b, a + b \neq 0$

**SECTION C (6 MARKS EACH)**

11. ✓ Find the probability that when hand of 7 cards is drawn from a well shuffled deck of 52 cards it contains :  
(i) all kings  
(ii) 3 kings  
(iii) at least 3 kings

12. ✓ If  $f(x) = \begin{cases} mx^2 + n & x < 0 \\ nx + m & 0 \leq x \leq 1 \\ nx^3 + m & x > 1 \end{cases}$

For what integers  $m$  &  $n$  does both  $\lim_{x \rightarrow 0} f(x)$  &  $\lim_{x \rightarrow 1} f(x)$  exist?

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