

**Topics : Circle, Permutation & Combination**

**Type of Questions**

**M.M., Min.**

**Single choice Objective (no negative marking) Q.,1,2,3,4**

**(3 marks, 3 min.)**

**[12, 12]**

**Multiple choice objective (no negative marking) Q.5**

**(5 marks, 4 min.)**

**[5, 4]**

**Subjective Questions (no negative marking) Q. 6,7,8**

**(4 marks, 5 min.)**

**[12, 15]**

1. Equation of the chord of circle  $x^2 + y^2 - 6x + 8y = 0$  with  $(5, -3)$  as its middle point is  
 (A)  $2x + y - 7 = 0$       (B)  $x - 2y - 11 = 0$       (C)  $x + y - 2 = 0$       (D)  $x - y - 8 = 0$
  
2. If the radius of the circumcircle of the triangle TPQ, where PQ is chord of contact corresponding to point T with respect to circle  $x^2 + y^2 - 2x + 4y - 11 = 0$ , is 6 unit, then distance of T from the director circle of the given circle is :  
 (A) 6      (B) 12      (C)  $6\sqrt{2}$       (D)  $12 - 4\sqrt{2}$
  
3. The internal common tangents of the circles  $x^2 + y^2 - 4x - 4y + 4 = 0$  and  $x^2 + y^2 + 6x + 6y + 9 = 0$  are :  
 (A)  $x - y = 2$  &  $x + 2y = 3$       (B)  $2x - 3y = 4$  &  $x + 5 = 5$   
 (C)  $x + 1 = 0$  &  $y - 3 = 0$       (D) None of these
  
4. The length of transverse common tangent of the circles  $x^2 + y^2 = 1$  and  $(x - h)^2 + y^2 = 1$  is  $2\sqrt{3}$ , then the value of 'h' is :  
 (A)  $\pm 2$       (B)  $\pm 4$       (C)  $\sqrt{3}$       (D) None of these
  
5. Equation of a circle of radius 2 and touching the circles  $x^2 + y^2 - 4|x| = 0$  is  
 (A)  $x^2 + y^2 + 2\sqrt{3}y + 2 = 0$       (B)  $x^2 + y^2 + 4\sqrt{3}y + 8 = 0$   
 (C)  $x^2 + y^2 - 4\sqrt{3}y + 8 = 0$       (D) None of these
  
6. If the letters of the word 'SHWETA' are written in all possible ways and then are arranged as in a dictionary, then the rank of the word 'SHWETA' is .....
  
7. How many numbers divisible by 5 and lying between 4000 and 5000 can be formed from the digits 4, 5, 6, 7 and 8 (Repetition of digits is allowed).
  
8. How many car number plates can be made if each plate contains 2 different letters of english alphabet, followed by 3 different digits.

## Answers Key

1. (A)    2. (D)    3. (D)    4. (B)  
5. (B, C)    6. 430    7. 25    8. 468000