

# JEE Chapter 3 A,B

ai24btech11028 - Ronit Ranjan

## A. FILL IN THE BLANKS

- 1) The coefficient of  $x^{99}$  in the polynomial  $(x-1)(x-2)\dots(x-100)$  is..... (1982-2 Marks)
- 2) If  $2 + i\sqrt{3}$  is a root of the equation  $x^2 + px + q = 0$ , where  $p$  and  $q$  are real, then  $(p,q)=(\dots\dots\dots, \dots\dots\dots)$ . (1982 - 2 Marks)
- 3) If the product of the roots of the equation  $x^2 - 3kx + 2e^{2\ln k} - 1 = 0$  is 7, then the roots are real for  $k = \dots\dots\dots$  (1984 - 2 Marks)
- 4) If the quadratic equation  $x^2 + ax + b = 0$  and  $x^2 + bx + c = 0$  ( $a \neq b$ ) have a common root then value of  $a+b$  is..... (1986 - 2 Marks)
- 5) The solution of equation  $\log_7 \log_5(\sqrt{x+5} + \sqrt{x}) = 0$  is..... (1986 - 2 Marks)
- 6) If  $x < 0, y, 0, x + y + \frac{x}{y} = \frac{1}{2}$  and  $(x+y)(\frac{x}{y}) = -\frac{1}{2}$ , then  $x = \dots\dots\dots$  and  $y = \dots\dots\dots$  (1990 - 2 Marks)
- 7) Let  $n$  and  $k$  be such positive numbers such that  $n \geq \frac{(k)(k+1)}{2}$ . The number of solutions  $(x_1, x_2, \dots, x_k), x_1 \geq 1, x_2 \geq 2, \dots, x_k \geq k$ , all integers, satisfying  $x_1 + x_2 + \dots + x_k = n$ , is..... (1996 - 2 Marks)
- 8) The sum of all the real roots of the equation  $|x-2|^2 + |x-2| - 2 = 0$  is (1997 - 2 Marks)

## B. TRUE / FALSE

- 1) For every integer  $n > 1$ , the inequality  $(n!)^{\frac{1}{n}} < \frac{n+1}{2}$  holds. (1981 - 2 Marks)
- 2) The equation  $2x^2 + 3x + 1 = 0$  has an irrational root. (1983 - 1 Mark)
- 3) If  $a < b < c < d$ , then the roots of the equation  $(x-a)(x-c) + 2(x-b)(x-d) = 0$  are real and distinct. (1984 - 1 Mark)
- 4) If  $n_1, n_2, \dots, n_p$  are  $p$  positive integers, whose sum is an even number, then the number of odd integers among them is odd. (1985 - 1 Mark)
- 5) If  $P(x) = ax^2 + bx + c$  and  $Q(x) = -ax^2 + dx + c$ , where  $ac \neq 0$ , then  $P(x)Q(x) = 0$  has at least two real roots. (1985 - 1 Marks)
- 6) If  $x$  and  $y$  are positive real numbers and  $m, n$  are any positive integers, then  $\frac{x^n y^m}{(1+x^{2n})(1+y^{2m})} > \frac{1}{4}$  (1989 - 1 Mark)