

# jee-main-maths-13-04-2023-shift-2<sup>1</sup>

EE24BTECH11030 - J.KEDARANANDA

- 1) The random variable  $X$  follows binomial distribution  $B(n, p)$ , for which the difference of the mean and the variance is 1. If  $2\mathbb{P}(x = 2) = 3\mathbb{P}(x = 1)$ , then  $n^2\mathbb{P}(X > 1)$  is equal to
- a) 16                      b) 11                      c) 12                      d) 15
- 2) Let the centre of a circle  $C$  be  $(\alpha, \beta)$  and its radius  $r < 8$ . Let  $3x + 4y = 24$  and  $3x - 4y = 32$  be two tangents and  $4x + 3y = 1$  be a normal to  $C$ . Then  $(\alpha - \beta + r)$  is equal to
- a) 5                      b) 6                      c) 7                      d) 9
- 3) Let  $N$  be the foot of perpendicular from the point  $P(1, -2, 3)$  on the line passing through the points  $(4, 5, 8)$  and  $(1, -7, 5)$ . Then the distance of  $N$  from the plane  $2x - 2y + z + 5 = 0$  is
- a) 6                      b) 7                      c) 9                      d) 8
- 4) All words, with or without meaning, are made using all the letters of the word MONDAY. These words are written as in a dictionary with serial numbers. The serial number of the word MONDAY is
- a) 328                      b) 327                      c) 324                      d) 326
- 5) Let  $(\alpha, \beta)$  be the centroid of the triangle formed by the lines  $15x - y = 82$ ,  $6x - 5y = -4$  and  $9x + 4y = 17$ . Then  $\alpha + 2\beta$  and  $2\alpha - \beta$  are the roots of the equation

a)  $x^2 - 13x + 42 = 0$    b)  $x^2 - 10x + 25 = 0$    c)  $x^2 - 7x + 12 = 0$    d)  $x^2 - 14x + 48 = 0$