## 2023 12th april shift-2

## EE24BTECH11066 - YERRA AKHILESH

16) If the circles  $x^2 + y^2 - 2x - 4y + 4 = 0$  and  $x^2 + y^2 - 6x - 10y + 20 + 2\sqrt{13} = 0$  touch each other at the point (a, b), then  $(3a - 2b)^2$  is equal to : [12th April shift2,2023]

17) If the angle between the line  $l: \frac{x-1}{2} = \frac{y+1}{1} = \frac{z-2}{2}$  and the plane  $P: \lambda x + 4y - 7 = 0, \lambda \neq 0$ , is  $\operatorname{cosec}^{-1}\left(\frac{3}{2}\right)$ , then the sum of co-ordinates of the point where line l crosses the

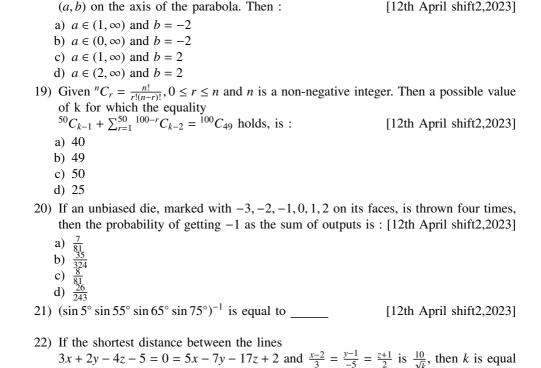
18) Let three distinct normal be drawn to the parabola  $y^2 + 4y - 6x - 8 = 0$  from a point

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a) 1b) 4c) 9d) 13

plane P is:

a) -33b) -2c) 3d) 6



- 23) For  $p \in \mathbb{N}$ , if the angle between pair of tangents drawn to the ellipse  $3x^2 + 2y^2 = 5$ from the point (1, p) is  $\tan^{-1}\left(\frac{12}{\sqrt{5}}\right)$ , then the distance of the vertex of the parabola  $y = x^2 - px + p + 1$  from the point (-7, 8) is equal to \_\_\_\_\_ [12th April shift2,2023]
- 24) Let P be a polygon with n vertices such that the line segment joining any two points of P remains entirely in P. If the number of diagonals of P is n + 25, then n is equal to \_\_\_\_\_ [12th April shift2,2023]
- 25) Let f(x) be a polynomial of degree 5 such that  $\lim_{x \to 0} \frac{f(x)}{x^2} = 1$ , f(-1) = -1, f(x) 14x has an extrema at x = 1 and f(x) 10x has an extrema at x = -1. Then f(2) is [12th April shift2,2023] equal to \_\_\_\_
- 26) The number of 7 digits integers formed by using the digits 2, 3, 4, 5 only and having the sum of digits equal to 18 is \_\_\_\_\_ [12th April shift2,2023]
- 27) The remainder when  $(556)^{40}$  is divided by 7 is [12th April shift2,2023]
- 28) Let [t] denote the greatest integer less than or equal to t. Then the value of
- 29) Let  $A = \frac{1}{\sqrt{2}} \begin{pmatrix} 1 & 1 \\ -1 & 1 \\ 1 & 1 \end{pmatrix}$  and  $B = \begin{pmatrix} 1 & 0 \\ 0 & -1 \end{pmatrix}$ . If  $k, l \in \mathbb{N}$  be such that  $A^k B^l = I$ , then the [12th April shift2,2023]
- 30) Let  $A_1 = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$ ,  $A_2 = \begin{pmatrix} 2 & 3 \\ 4 & 5 \end{pmatrix}$ ,  $A_3 = \begin{pmatrix} 6 & 7 & 8 \\ 9 & 10 & 11 \\ 12 & 13 & 14 \end{pmatrix}$ , ... Then the sum of the diagonal [12th April shift2,2023] elements of  $A_{20}$  is