ASSIGNMENT 12

1

EE24BTECH11034 - K Teja Vardhan

I. JEE PYQ 2024 JANUARY 30, SHIFT 2

1)	Bag A contains 7 white balls and 3 red balls. Bag B contains 3 white balls and 2
	red balls. A ball is chosen randomly and found to be red. Then, find the probability
	that it is taken from bag A:

a) $\frac{7}{20}$	b) $\frac{1}{2}$	c) $\frac{3}{7}$	d) $\frac{1}{5}$
2) Given $\left \vec{b} \right =$			
Then $\left ec{b} imes ec{a} ight $	$-\left.ec{b}\right ^{2}$ is		

- b) 8 a) 0 c) 1 d) 10
- 3) If $f\left(x\right)=\ln\left(\frac{2x+3}{4x^2-x-3}\right)+\cos^{-1}\left(\frac{2x+1}{x+2}\right)$. If domain of $f\left(x\right)$ is $\left[\alpha,\beta\right]$, then $5\alpha-4\beta$
 - a) -2b) 3 c) -4d) 1
- 4) If $f(x) = \frac{x}{(1+x^4)^{1/4}}$ and g(x) = f(f(f(f(x)))), then $\int_0^{\sqrt{2}-\sqrt{5}} x^2 g(x) dx$ is equal
 - b) $\frac{13}{6}$ c) $\frac{2}{5}$ a) $\frac{11}{6}$ d) $\frac{17}{6}$
- 5) If first term of a GP is a and third term is b and in second GP first term is a and fifth term is b and eleventh term of first GP common to which term of second GP:
 - c) 21 b) 25 a) 24 d) 18
- 6) $z^{1985} + z^{100} + 1 = 0$ and $z^3 + 2z^2 + 2z + 1 = 0$. Then number of common roots of equation is:
 - b) 2 c) 3 a) 1 d) 4
- 7) If $x^2 y^2 + 2hxy + 2gx + 2fy + c = 0$ is the locus of points such that it is equidistant from the lines x + 2y - 8 = 0 and 2x + y + 7 = 0, then the value of h + g + f + c is:

a) 15				b) -15	c) 20	d) -20
8) Let $A =$	$\begin{bmatrix} x \\ 0 \\ 0 \end{bmatrix}$	0 y 0	$\begin{bmatrix} 0 \\ 0 \\ z \end{bmatrix}$	and $\frac{x}{\sin \theta} = \frac{1}{\sin \theta}$	$\frac{y}{\ln\left(\theta + \frac{2\pi}{3}\right)} = \frac{z}{\sin\left(\theta + \frac{4\pi}{3}\right)}$	$\frac{\pi}{3}$. Then

- a) Statement 1: $T_r(A) = 0$ and Statement 2: $T_r(\operatorname{adj}(\operatorname{adj}(A))) = 0$ are both true.
- b) Statement 1 is true.
- c) Statement 2 is true.
- d) None of these.
- 9) If $S_n = 3 + 7 + 11 + \cdots$ upto n terms and $40 > \frac{6}{n(n+1)} \sum_{k=1}^{n} S_k > 45$, then n is:
 - a) 9

b) 10

c) 11

- d) 12
- 10) In a paper there are 3 sections A, B, and C which has 8, 6, and 6 questions each. A student has to attempt 15 questions such that they have to attempt at least 4 questions out of each sections, then number of ways of attempting these questions are:
 - a) 11300
- b) 11376
- c) 12576
- d) 13372