03/09/2020-Shift 1

EE24BTECH11021 - Eshan Ray

16) If the number of integral terms in the expansion of $\left(3^{\frac{1}{2}}+5^{\frac{1}{8}}\right)^n$ is exactly 33, then the least value of n is :
    a) 264
    b) 256
    c) 128
    d) 248
17) If α and β are the roots of the equation $x^2+px+2=0$ and $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ are the roots of the equation $2x^2+2qx+1=0$, then $\left(\alpha-\frac{1}{\alpha}\right)\left(\beta-\frac{1}{\beta}\right)\left(\alpha+\frac{1}{\beta}\right)\left(\beta+\frac{1}{\alpha}\right)$ is equal to:
    a) $\frac{9}{4}\left(9+p^2\right)$
    b) $\frac{9}{4}\left(9+q^2\right)$
    c) $\frac{9}{4}\left(9-p^2\right)$
    d) $\frac{9}{4}\left(9-q^2\right)$
18) Let $[t]$ denote the greatest integer $\leq t$. If for some $\lambda \in R-\{0,1\}$, $\lim_{x\to 0}\left|\frac{1-x+|x|}{\lambda-x+[x]}\right|=L$, then L is equal to:
    a) 0
    b) 2
    c) $\frac{1}{2}$
    d) 1
19) $2\pi-\left(\sin^{-1}\frac{4}{5}+\sin^{-1}\frac{5}{13}+\sin^{-1}\frac{16}{65}\right)$ is equal to :
    a) $\frac{7\pi}{4}$
    b) $\frac{5\pi}{4}$
    c) $\frac{3\pi}{2}$
    d) $\frac{\pi}{2}$
20) The proposition $p \to\sim(p\wedge\sim q)$ is equivalent to :
    a) $(\sim p)\vee q$
    b) q
    c) $(\sim p)\wedge q$
    d) $(\sim p)\vee(\sim q)$
21) If $\lim_{x\to 0}\left\{\frac{1}{x^8}\left(1-\cos\frac{x^2}{2}-\cos\frac{x^2}{4}+\cos\frac{x^2}{2}\cos\frac{x^2}{4}\right)\right\}=2^{-k}$, then the value of k is ...
22) The diameter of the circle, whose centre lies on the line $x+y=2$ in the first quadrant and which touches both the lines $x=3$ and $y=2$, is...
23) The value of $(0.16)^{\log_{2.5}\left(\frac{1}{3}+\frac{1}{3^2}+\frac{1}{3^3}...to\infty\right)}$ is equal to ...
24) Let $A=\begin{pmatrix}x & 1\\ 1 & 0\end{pmatrix}, x\in R$ and $A^4=\left[a_{ij}\right]$. If $a_{11}=109$, then a_{22} is equal to ...

25) If $\left(\frac{1+i}{1-i}\right)^{m/2} = \left(\frac{1+i}{i-1}\right)^{n/3} = 1, (m, n \in N)$ then the greatest common divisor of the least values of m and n is ...