# 2021-July
# Session-20-07-2021-shift-2-16-20

EE24BTECH11038 - MALAKALA BALA SUBRAHMANYA ARAVIND

16) The value of $\tan\left(2\tan^{-1}\frac{3}{5}+\sin^{-1}\frac{5}{13}\right)$ is:

a) $\frac{220}{21}$

b) $\frac{110}{21}$

c) $\frac{55}{21}$

d) $\frac{20}{11}$

17) If sum of the first 21 terms of series $\log_{9^{\frac{1}{2}}}^{x}+\log_{9^{\frac{1}{3}}}^{x}+\log_{9^{\frac{1}{4}}}^{x}+\cdots$, where $x>0$ is 504, then x is equal to

a) 243
b) 9
c) 7
d) 81

18) Two circles pass through $(-1,4)$ and their centres lie on $x^2+y^2+2x+4y=4$. If $r_1$ and $r_2$ are maximum and minimum radii and $\frac{r_1}{r_2}$ = a+ $\sqrt{2}$b, then the value of a+b is

a) 3
b) 11
c) 5
d) 7

19) If $\triangle ABC$ is a right-angled triangle with sides a,b and c and smallest angle $\theta$. If $\frac{1}{a}$, $\frac{1}{b}$ *and* $\frac{1}{c}$ are also the sides of the right-angle triangle then find $\sin\theta$.

a) $\sqrt{\frac{\left(3-\sqrt{5}\right)}{2}}$

b) $\frac{\left(3-\sqrt{5}\right)}{2}$

c) $\sqrt{\frac{\left(3+\sqrt{5}\right)}{2}}$

d) $\frac{\left(3+\sqrt{5}\right)}{2}$

20) For the natural numbers m,n if $(1-y)^m(1+y)^n$=$1+a_1y+a_2y^2+a_3y^3+\cdots a_{m+n}y^{m+n}$ and $a_1=a_2=10$, then the value of $(m+n)$ is equal to

a) 88
b) 64

c) 100
d) 80