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 DATE / TIME : 30TH APRIL 2020 11:00 HRS
 MODULE CODE : M4X02192
 MODULE DES : ENGINEERING SCIENCE

1) $D = 5\text{ m}$ CONDUCTION AREA OF A
 $L = 8\text{ m}$ TEMPS CYLINDER
 $K = 1.7\text{ W/mK}$ $T_1 = 68^\circ\text{C} + 273 = 341\text{ K}$ $A = \pi DL$
 $h = 12\text{ W/mK}$ $T_2 = 15^\circ\text{C} + 273 = 288\text{ K}$ $(\pi)(5)(8) = 125.66$
 $X = 200\text{ mm} = .2\text{ m}$ CONVECTION m^2
TEMPS $A = 125.66\text{ m}^2$
 $T_2 = 341\text{ K}$
 $T_1 = 288\text{ K}$

CONDUCTION : $Q = \frac{-KA(T_2 - T_1)}{x}$ so $\frac{(-1.7)(125.66)(288 - 341)}{.2} = 56609.83\text{ W}$
 or 56.6 kW

CONVECTION : $Q = hA(T_2 - T_1)$ so $\frac{(12)(125.66)(341 - 288)}{1} = 79919.76\text{ W}$
 or 79.91 kW

$$56609.83 + 79919.76 = 136529.59\text{ W}$$

$$\text{HEAT TRANSFER (Q)} = 136.53\text{ kW}$$