HEAT TRANSFER

Q1. Consider a hemispherical furnace with a flat circular base of diameter D. The view factor from the done of this furnace of this fiurnace to its base is

a) 2
b) $\frac{1}{2}$
c) 12
d) 4

Q2. Two very large parallel plates are maintained at unfiorm temperature of and and have emissivities and respectively. The net rate of radiation heat transfer between the two surfaces per unit area of the plate is _____ kW

Q3. A stainless steel cylinder of inner diameter 18 cm and outer diameter 21 cm. Lenght is 2m. Has its inner surface at 90^0C and outer surface at 30^0C . The radius when the temperature is 50^0C is _____ cm

Q4. Two very long concentric cylinders of diam eter and are maintained at uniform temperature of and have emissivites and respectively. The net rate of radiation heat transfer between two cylinders per unit lenght of the cylinder is _____ kW

Q5. Find out the amount of heat transfer through on iron fin of length 50 mm. Area Atmospheric temperature is 20^0C and surface temperature is 80^0C. Assume k = 210 kJ/m hr^{0}C and h = 42 kJ/m^2 hr ^{0}C

a) 24.23 kj/hr
b) 30.61kj/hr
c) 51.6 kj/hr
d) 15.1kj/hr

Q6. After expansion from a turbine, the heat exaust gases are used to heat the compressed air from a compressor with the help of a cross flow compact heat exchanger of $[\in = 0.8]$ what is NTU
(a) 2 (b) 4 (c) 8 (d) 16

Q7. Two long parallel surfaces each of $\in = 0.7$ are maintaiend at different temperatures and have radiation exchange between them. It is desired to reduce 75% of this heat using this parallel sheet $\in = 0.7$. The number of sheet required are _____

Q8. The heat transfer coeffcient for a gass flowing over a thin flat plate 3 m long and 0.3 m wide varies with distance from the leading edge according to $h_i(x) = 10x^{(-1/4)} w/m^2k$. Rate of heat transfer between plate and gas is the plate is at 170^0C and the gas is at 30^0C is _____ W

Q9. Extended surface are used to increases rate of heat transfer when the convective heat trans fer cofficient $[h = mK]$. The addition of ex tended surfaces
(a)will increase the heat trans fer rate
(b)decrease the heat transfer rate
(c)not effect the heat transfer rate
(d)first increases and then decreases the heat transfer rate

Q10. For a thin sheet total $E = 32w/m^2$. Total ir radiation $G = 93w/m^2$. For the given sheet reflectivity $(\rho) = 0.6,$, absorptivity $(\alpha) = 0.1,$ Transmissivity $(\tau) = 0.3$. Value of radiosity (J) is _____ w/m^2