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5th SEMESTER

SUPPLEMENTARY EXAMINATION

PT 301 Heat Transfer

Roll No. _____

B.Tech. PSCT

(Feb-2019)

Time: 3:00 Hours

Max. Marks: 40

Note: Answer all questions. Assume any suitable data, if necessary

- 1 (a). Derive an expression for Unsteady State Conduction.
(b). Write the expressions for Dittus Boelter and Sieder-Tate Equation for convective heat transfer. 8+2=10
- 2 (a). Why the thermal conductivity of the material in damp state is higher as compared to that in dry state? Give suitable reasons.
(b). Explain with suitable diagram working and construction of forced circulation evaporator? Also list out its advantages and disadvantages. 2+8=10
- 3 (a). A hollow sphere has an inside surface temperature 300°C and outside surface temperature of 30°C. Calculate the heat loss by conduction for an inside diameter of 5 cm and outside diameter of 15cm, given that the thermal conductivity of the material is 15kcal/hr.m°C.
(b). What is condensation? Differentiate between Film-wise and Drop-wise Condensation.
(c). What is boiling? Discuss the types of boiling. [3+5+2=10]
- 4(a). Water enters a two-fluid heat exchanger at 55°C and leaves at 85°C. Hot gases enter at 305°C and leaves at 160°C. If the total heat transfer area is 500 m² and the overall heat transfer co-efficient is 600kcal/hr m°C, determine the total heat transfer per hour for: (1) Parallel flow, and (2) Counter flow of the two fluids.
(b). Write a note on the following (with suitable diagrams)(any one)
 - Fluidized Heat Exchanger
 - LMTD Correction Factor
 - 2-4 pass shell and tube heat exchanger. [5+5=10]

END