GIET UNIVERSITY, GUNUPUR – 765022

RD19MTECH044

Registration No: | | | | | | | | | | |

Total Number of Pages : 01 M.TECH

AR-19

M.TECH 1ST SEMESTER EXAMINATIONS NOV/DEC 2019

CHEMICAL, MPCCH1030

ADVANCED HEAT TRANSFER

Time: 3 Hours Max Marks : 70

The figures in the right hand margin indicate marks.

PART-A (10 X 2=20 MARKS)

1. Answer the following questions.
   a. Define Thermal Conductivity.
   b. Define Biot number and Fourier number
   c. What do you understand by stability criterion for the solution of transient problems ?
   d. State Newtons law of cooling.
   e. Write the formula for volume expansion coefficient.
   f. Define Nusselt no. and its physical significance
   g. Which boundary layer thickness is greater and why for fluid having Prandtl number greater than 1?
   h. What is meant by reflectivity?
   i. What is meant by transmitivity?
   j. What is the range of values for the emissivity of a surface ?

PART-B (5 X 10=50 MARKS)

Answer any five questions from the following.

2. Derive the energy equation for conduction in sphere for radial direction heat flow with internal heat generation.
3. Derive the energy equation for conduction in three dimensions for plane wall.
4. Explain the significance of forward, backward and central difference methods
5. Explain the importance of heat transfer coefficient over thermal conductivity in convection heat transfer.
6. Explain the Colburn analogy.
7. Derive the general expression of forced convection heat transfer co-efficient by dimensional analysis method.
8. Derive the expression for the rate of heat transfer by radiation within infinite long concentric cylinder.

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