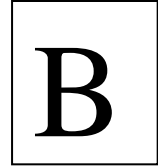


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**SNS College of Technology, Coimbatore-35.**  
**(Autonomous)**  
**B.E/B.Tech- Internal Assessment -II**  
**Academic Year 2023-2024 (Odd Semester)**  
**Fifth Semester**  
**Aerospace Engineering**  
**19ASE304– Heat Transfer**



**Time: 1<sup>1/2</sup> Hours**

**Maximum Marks: 50**

**Answer All Questions**

**PART - A (5x 2 = 10 Marks)**

			<b>CO</b>	<b>Blooms</b>
1	What is Convective heat transfer?		CO2	App
2	Write down differential equation for Continuity of fluid flow.		CO2	Rem
3	What is Stefan's Bolts Mann law?		CO3	Rem
4	Define Shape factor.		CO3	App
5	Distinguish between Absorptivity & Transmittivity of radiation.		CO3	App
<b>PART – B (2x13 =26 Marks)</b>				
			<b>CO</b>	<b>Blooms</b>
6.	(a) Air at 400K and 1atm pressure flows at a speed of 1.5 m/s over a flat plate of 2m long. The plate is maintained at a uniform temperature of 300K. If the plate has a width of 0.5m, estimate the heat transfer coefficient and the rate of heat transfer from the air stream to the plate. Also estimate the drag force acting on the plate.	14	CO2	Rem
	(or)			
	(b) Derive an expression for LMTD of a counter flow heat exchanger. Hence deduce its value when the heat capacities of both the fluids are equal.	13	CO2	Eva
7.	(a) Two very large parallel plates with emissivities 0.5 exchange heat. Determine the percentage reduction in the heat transfer rate if a polished aluminium radiation shield of $c = 0.04$ is placed in between the plates.	13	CO3	Eva
	(or)			

	(b)	Explain the following as applied to radiation heat transfer.  (i) Wien's displacement law (ii) Lambert's cosine law (iii) Shape factor	4 4 5	CO3	App
8.	(a)	By dimensional analysis show that for forced convection heat transfer, Nusselt number can be expressed as a function of Prandtl number and Reynolds number.	14	CO2	Cre
		(or)			
	(b)	Discuss how the radiation from gases differs from that of solids.	14	CO3	Cre
*****					
<b>Abbreviations :</b> Rem- Remember    Und-Understanding    App-Apply    Ana-Analyze    Eva- Evaluate    Cre-Create					