PRN:		Course Code :	PAS303B

Second Year M. **Tech** End Semester Examination Winter 2024

Boundary Layer Theory 000473

Day and Date: Wed 27 NOV 2024 Max Marks: **100**

Time : 02:00PM To 05:00PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following questions**			
	a)	Briefly explain about Velocity and Acceleration of the fluid particles.	08	3	1
	b)	Give the physical importance for the following non dimensional parameters in brief (with Suitable equations) i) Reynolds number ii) Parandtl number.	08	3	1
		OR			
	b)	Draw a neat sketch flow over aerofoil.	08	3	1
Q.2		**Attempt the following question**			
	a)	Describe an unsteady flow between plates with bottom injection and top section.	08	2	2
	b)	Briefly explain Velocity distribution and Pressure distribution in the case of two dimensional flow.	08	2	2
		OR			
	b)	Drive the Poiseuillel's flow equation for velocity distribution.	08	2	2
Q.3		**Attempt any two from the following**			
	a)	Define i) Thermal boundary layer ii) Forced convection.	08	2	3
	b)	Drive the laminar boundary layer equations	08	2	3
	c)	What is momentum integral equation used in boundary layer theory.	08	2	3
Q.4		**Attempt any two from the following**			
	a)	Explain Blasius solution for flat plate.	08	2	4
	b)	What is Reynold's analogy acting in boundary layer thickness?	08	2	4
	c)	Drive boundary layer equation for steady two dimensional flow.	08	2	4
Q.5		**Attempt any two of the following**			
	a)	Explain in detail Temporal instability and Spatial instability.	09	2	5
	b)	Write about time averaging and fluctuation with neat diagram.	09	2	5

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c)	Write short notes on: i) Schlieren methods ii) Pressure probe.		09	2	5
Q.6	**Attempt any Two of the following**				
a)	Write in detail about Separation of boundary layer and Explain the effect of pressure gradient and velocity gradient on boundary layer separation ?		09	3	5
b)	What are the Methods of preventing the separation of boundary layer.		09	3	5
c)	Derive the Expression for drag and lift ?		09	3	5

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