

Model Question Paper-2 with effect from 2019-20 (CBCS Scheme)

USN

--	--	--	--	--	--	--	--	--	--

Fourth Semester B.E. Degree Examination AERODYNAMICS-I

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			*Bloom's Taxonomy Level	Marks
Q.01	a	With a relevant sketch, Derive an expression for control volume approach to momentum equation.	L2	10
	b	Explain the basic types of flow.	L1	05
	c	Write a note on velocity potential function.	L2	05
OR				
Q.02	a	With a neat sketch explain the pathline, streakline and streamline.	L1	09
	b	Derive an expression for compressibility.	L2	06
	c	Write a note on Mach cone and Mach angle.	L2	05
Module-2				
Q. 03	a	Write a note on fundamental aerodynamics variable.	L1	10
	b	With a neat sketch, explain wing platform geometry.	L1	10
OR				
Q.04		with a neat sketch explain the followings for an airfoil	L2	20
		a) center of pressure		
		b) pressure co-efficient		
		c) Aerodynamic center.		
Module-3				
Q. 05	a	With a neat sketch explain the combination of uniform flow with source and sink flow.	L3	15
	b	Write a note on Kutta conditions for an airfoil.	L2	05
OR				
Q. 06	a	With a neat sketch explain vortex sheet.	L2	10
	b	Obtain the expression dcl/dx for a symmetric airfoil using classical airfoil theory.	L3	10
Module-4				
Q. 07	a	With a neat sketch explain infinite and semi-infinite vortex filament	L2	10
	b	Explain the limitations of Prandtl's lifting line theory	L2	10
OR				
Q. 08	a	explain lift, drag and moment characteristics of complete airplane	L2	10
	b	Write a note on extended lifting line theory	L2	10
Module-5				
Q. 09	a	(i)Discuss the advantages of swept wing in model airplane	L1	05
		(ii)write a note on simplified horse shoe vortex model	L3	05
	b	Write a note on effect of thickness and shock induced separation of an airfoil	L2	10
OR				
Q. 10	a	What are high lift devices? Discuss in detail the high lift devices and explain their effect on airplane performance with a neat sketch.	L1	15
	b	Explain the source panel method.	L2	05

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of questions.