

Model Question Paper

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Sixth Semester B.E. Degree Examination Flight Mechanics

TIME: 03 Hours

Max. Marks: 100

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

Module – 1			Marks	CO	RBTL
Q.1	(a)	Brief the structure of Earth Atmosphere.	10	1	1
	(b)	Derive the expression for Pressure, Temperature and Density in terms of Altitude using ISA model.	10	1	3
OR					
Q.2	(a)	Explain the wing contribution to static longitudinal stability	10	1	2
	(b)	Explain the tail contribution to static longitudinal stability	10	1	2
Module – 2					
Q.3	(a)	Write short notes on elevator hinge moment.	8+2	1	1
	(b)	Derive the equation for stick free neutral point.	2+2+2+4	1	3
OR					
Q.4	(a)	Explain about the stick force and stick force gradients in aircraft.	10	1	2
	(b)	Obtain the expression for elevator angle to trim the aircraft in stick free condition.	10	1	3
Module – 3					
Q.5	(a)	Define Weather cocking effect and explain.	10	2	1
	(b)	Explain the rudder requirements and effect of dorsal fin.	10	2	2

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Q.6	(a)	Discuss about dihedral effect and sweep back effect.	10	2	2
	(b)	Explain strip theory to determine aileron control power.	10	2	3
Module – 4					
Q.7	(a)	Derive the Routh's criteria for dynamic stability of an aircraft	10	3	3
	(b)	Explain the different modes of motion of an airplane followed by a disturbance.	10	3	2
OR					
Q.8	(a)	Write short notes on : a) Auto rotation b) spin and spin recovery c) Dutch roll d) Spiral and Directional Divergence	5+5+5+5	3	2
Module – 5					
Q.9	(a)	Explain the primary and secondary controls of a helicopter.	20	3	2
OR					
Q.10	(a)	Explain the parts and their functions of Helicopter.	10	3	2
	(b)	Explain the rotor function in vertical flight.	10	3	2