Code No: **R1641213** **R16** **Set No. 1**

IV B.Tech I Semester Regular Examinations, October/November - 2019

HELICOPTER ENGINEERING

(Aeronautical Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B
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PART–A *(14 Marks)*

1.	a)	What is the importance of Auxiliary Rotor?	[2]
	b)	What is Hovering?	[2]
	c)	Write equation of "Total Equivalent Drag Force".	[3]
	d)	What are the important types of static stability that should be considered for a helicopter?	[3]
	e)	Explain P/T Formulation.	[2]
	f)	What are conventional components of a Hover craft?	[2]

PART–B *(4x14 = 56 Marks)*

2.	a)	With neat diagrams point out the required forces direction and rotor plane of rotation for all possible flights of a helicopter.	[7]
	b)	Explain about Lift Dissymmetry for a helicopter.	[7]
3.	a)	Explain the Blade element theory.	[7]
	b)	Explain the method to do the estimation of hover ceiling.	[7]
4.	a)	Explain about Dead Man's Curve and its significance for a helicopter.	[7]
	b)	Explain about the effects of aerofoil characteristics on performance of rotor.	[7]
5.	a)	Explain about Damping in Pitch or Roll.	[7]
	b)	Explain about the Static Stability of helicopter in hovering.	[7]
6.	a)	Describe the momentum theory for vertical climb of helicopter.	[7]
	b)	Describe the difference between VTOL and STOL aircraft in operation.	[7]
7.	a)	Differentiate Open plenum and Momentum curtain theory.	[7]
	b)	Derive an equation for Drag acting on Hovercraft on land.	[7]