BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M. TECH. **SEMESTER : II**
BRANCH: SER **SESSION : SP/2025**

SUBJECT: SR508 AERODYNAMIC STABILITY AND CONTROL

TIME: 3 HOURS **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Discuss briefly on the different types of jet control of a missile.	[5]	1	II
Q.1(b)	Classify the missile on the basis of trajectory taken by it.	[5]	1	II
Q.2(a)	Explain the effect of wing in directional static stability of an aircraft.	[5]	2	II
Q.2(b)	Derive the expression of load factor at the lowest point of pull-out manoeuver of an aircraft.	[5]	2	III
Q.3(a)	Describe the phugoid motion of an aircraft.	[5]	3	II
Q.3(b)	Estimate the damping in roll of a wing of rectangular planform.	[5]	3	III
Q.4(a)	Explain the automatic control system with an example.	[5]	4	II
Q.4(b)	Briefly discuss on the feedback and non-feedback systems with examples.	[5]	4	II
Q.5(a)	What are the problems in safety of launch in case of retrofitting a missile to a parent aircraft?	[5]	5	II
Q.5(b)	Consider a component with linearly decreasing reliability function. The reliability is 1 at time t = 0 and is 0 at t = 5000 hours. Calculate its Mean Time to Failure (MTTF).	[5]	5	III

:::::29/04/2025:::::