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

CLASS: M.TECH **SEMESTER : I**
BRANCH: SER **SESSION : MO/19**

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.

Q.1(a)	Differentiate between missile and airplane aerodynamics.	[5]
Q.1(b)	Classify the different types of missiles based on their applications areas.	[5]
Q.2(a)	Using suitable diagram, show the different types of forces and moments acting on an aircraft.	[5]
Q.2(b)	Derive the expression for static margin of a missile.	[5]
Q.3(a)	How does the dynamic stability differ from a static stability?	[5]
Q.3(b)	Using suitable diagrams, analyze the motion of an aircraft experiencing turbulence at high altitude.	[5]
Q.4(a)	What do you mean by feedback control system? Using suitable block diagrams, design a feedback control system for a missile to hit its target.	[5]
Q.4(b)	Classify the different types of control system based on their output.	[5]
Q.5(a)	Reliability analysis of missiles are highly important. Justify.	[5]
Q.5(b)	Briefly discuss the launching complexities associated with Air to Air missiles.	[5]

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