

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

**CLASS: M. Tech.
BRANCH: SER**

**SEMESTER : II
SESSION : SP/22**

SUBJECT: SR 581 Missile Aerodynamics

TIME: 2.00 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.**

-
- Q.1(a) Discuss on the wing control of a missile and its merits / demerits. [5]
- Q.1(b) Explain the damping in roll of a missile in lateral motion. [5]
- Q.2(a) Write down the response characteristics of a missile based on the roots of characteristics equation. [5]
- Q.2(b) Discuss on the short and long period oscillatory motions of a missile. [5]
- Q.3(a) Describe the effect of flight attitudes for forward control design. [5]
- Q.3(b) Discuss on the method of evaluating aerodynamic load distribution on a missile body. [5]
- Q.4(a) Briefly discuss on the consideration of missile structural failure for the parent aircraft safety. [5]
- Q.4(b) Write down the effects of launcher deflection and tip-off in dispersion of a missile at ground launch. [5]
- Q.5(a) Discuss the free-flight dispersion of a missile during boost phase of flight due to surface winds. [5]
- Q.5(b) Do the qualitative analysis of missile drift due to cross wind during its power-off flight. [5]

:::::06/05/2022:::::