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21AE/AS733

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Flight Testing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Give the purpose and scope of flight testing and also mentioning types of flight testing. (10 Marks)
- b. Explain how a flight test program is planned and prepared. (10 Marks)

OR

- 2 a. Explain the methods for avoiding (or) minimizing the error related to the flight testing. (10 Marks)
- b. Explain on board and Ground system of radio telemetry functions for data acquisition. (10 Marks)

Module-2

- 3 a. Elaborate the In-flight calibration methods in detail. (10 Marks)
- b. Explain propeller driven airphase PIW-VIW theory for level flight performance. (10 Marks)

OR

- 4 a. Write short notes on : (i) Constant speed propeller (ii) Fixed speed propeller. (10 Marks)
- b. Discuss the key factors that influence the maneuvering performance of an aircraft during Flight testing. (10 Marks)

Module-3

- 5 a. Explain the stick-free static longitudinal stability in detail. (10 Marks)
- b. Elaborate about the Flight test used for determining neutral point in stick fixed and stick free stability condition. (10 Marks)

OR

- 6 a. Explain the following static longitudinal stability tests, (i) Speed stability (ii) Flight path stability. (10 Marks)
- b. Explain the flight test method and data reduction method for evaluating Phugoid mode and short period mode. (10 Marks)

Module-4

- 7 a. Explain steady heading side slip method for determining lateral directional static stability. (10 Marks)
- b. Elaborate the Flight Test methods for Evaluating Dynamic Lateral Directional stability. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Write about the Roll Coupling influences in lateral control stability. (10 Marks)
b. Explain the following :
(i) Adverse yaw effect.
(ii) Aileron reversal. (10 Marks)

Module-5

- 9 a. Write the Cooper-Harper scale and explain in detail. (10 Marks)
b. Elaborate the Flight test procedures under flying qualities. (10 Marks)

OR

- 10 a. Explain the Flight Test method for Stall characteristics. (10 Marks)
b. Explain the Flight Test method for spin characteristics. (10 Marks)

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