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## Eighth Semester B.E. Degree Examination, June/July 2024

### 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. Discuss about weighing and ballasting techniques. (05 Marks)
- b. Enumerate the sources of errors in flight testing. (05 Marks)
- c. Explain how to avoid and minimize errors in flight testing. (10 Marks)

OR

- 2 a. What are pressure and temperature sensing devices? Explain a corresponding transducing technique used for flight testing. (10 Marks)
- b. Explain on board and ground based data acquisition system in radio telemetry. (10 Marks)

#### Module-2

- 3 a. Write short notes on:
  - i) Constant speed propeller.
  - ii) Fixed pitch propeller. (10 Marks)
- b. Explain the method of flight testing and data reduction methods for level term performance in detail. (10 Marks)

OR

- 4 a. Briefly discuss about range testing in a propeller driven aircraft. (10 Marks)
- b. Enumerate the flight test methods used for determining take off distance in detail. (10 Marks)

#### Module-3

- 5 a. Explain the flight test methods for determining the neutral points of stick fixed stability. (10 Marks)
- b. Paraphrase the following static longitudinal stability test:
  - i) Speed stability
  - ii) Flight path stability. (10 Marks)

OR

- 6 a. Describe the flight test method and data reduction method for evaluating phugoid and short period mode. (10 Marks)
- b. Explain the flight test methods for quantitative evaluation. (10 Marks)

#### Module-4

- 7 a. Write the FAA regulations and test technique in lateral-directional stability. (10 Marks)
- b. Explain how the steady state heading sideslip is performed for evaluating 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. Discuss about the methods used for evaluate dutch roll flight testing. (10 Marks)  
b. Explain the following in detail:  
i) Adverse yaw effect  
ii) Aileron reversal. (10 Marks)

Module-5

- 9 a. Explain about Cooper-Harper pilot rating scale for handling qualities of aircraft. (10 Marks)  
b. Explain the forces acting in spin and factors affecting auto-rotation. (10 Marks)

OR

- 10 a. Write in detail about flutter, vibration and buffet in drive testing. (10 Marks)  
b. Explain the flight test method for stall testing and safety consideration while performing stall maneuver. (10 Marks)

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