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10AE831

Eighth Semester B.E. Degree Examination, June/July 2019
Flight Testing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. Briefly explain the purpose and scope of flight testing, mentioning types of flight testing. (10 Marks)
b. Explain the sources of error related to flight testing and techniques for minimizing them. (10 Marks)
- 2 a. Explain system planning in flight test instrumentation. (06 Marks)
b. Briefly describe the instruments used for measuring pressure and temperature in flight testing. (14 Marks)
- 3 a. Briefly explain the methods for in flight calibration of airspeed. (10 Marks)
b. Explain the climb performance test methods and data reduction techniques. (10 Marks)
- 4 Explain the methods for determination of drag in flight, including the advantages and disadvantages of each method. (20 Marks)

PART – B

- 5 a. Explain the flight test methods for determining the stick fixed and stick free neutral points. (10 Marks)
b. Explain the flight methods and data reduction techniques for evaluating the phugoid mode aircraft. (10 Marks)
- 6 a. Explain the steady-heading side slip method for determining lateral directional static stability. (10 Marks)
b. Describe the Dutch roll motion of aircraft and the flight test methods and data reduction techniques for evaluating the Dutch roll mode. (10 Marks)
- 7 Explain the Cooper – Harper pilot Rating scale with the help of a neat flowchart and explain how a pilot assigns handling qualities level 1, 2 or 3 using the scale. (20 Marks)
- 8 a. Explain the flight test method for stall testing and the data requirement. (08 Marks)
b. Explain the effects of various airframe components in spin, keeping the phases of spin in view. (12 Marks)

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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.