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10AE81

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

Time: 3 hrs.

Max. Marks: 100

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

PART – A

- 1 a. Define and explain briefly the design process of an aircraft with flow chart. (10 Marks)
b. Mention the performance parameters for designing an aircraft. (10 Marks)
- 2 a. Explain the effect of wing loading on take-off and landing plane with the help of appropriate graph. (10 Marks)
b. Derive the equation of wing loading for its effect on climb. (10 Marks)
- 3 a. Explain the airfoil shape selection criterion. (10 Marks)
b. What are quantitative fuselages shapes explain? (10 Marks)
- 4 a. Explain the turbojet engine sizing. (10 Marks)
b. Write a typical spread sheet for propeller engine. (10 Marks)

PART – B

- 5 a. Derive an expression for aircraft ground roll. (10 Marks)
b. Enlist all phases of flight landing with schematic sketch and mention all the expressions related to each phase. (10 Marks)
- 6 a. Discuss briefly any two refined weight estimation methods used in aircraft. (10 Marks)
b. Explain longitudinal stability effect on performance of the aircraft. (10 Marks)
- 7 a. Sketch and explain three commonly used landing gear arrangements. (10 Marks)
b. Explain icing and de-icing system in an aircraft. (10 Marks)
- 8 a. Explain typical flight control system of an aircraft. (10 Marks)
b. Briefly explain weapon carriage of gun installation on military aircraft. (10 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.