

CBCS SCHEME

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15AE82

Eighth Semester B.E. Degree Examination, November 2020 Flight Vehicle Design

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions irrespective of modules.

Module-1

- 1 a. Explain the design process of an aircraft with a flowchart. (10 Marks)
b. Estimate the take off weight build up and explain it. (06 Marks)
- 2 a. Explain the estimation to take off distance with neat sketch. (10 Marks)
b. Derive an equation to show effect of wing loading on climb. (06 Marks)

Module-2

- 3 a. Explain conic lofting procedure with neat sketches. (08 Marks)
b. Explain conic fuselage development procedure with neat sketch. (08 Marks)
- 4 a. Explain the drawing procedure for aerofoil linear interpolation with neat sketch. (08 Marks)
b. Explain V-N diagram with neat sketch. (08 Marks)

Module-3

- 5 a. List out engine installed thrust correction parameters and briefly explain them. (08 Marks)
b. Explain the spreadsheet approach for turbojet engine sizing. (08 Marks)
- 6 a. Explain the different phases of landing with neat sketch and mention all the equations related to each phase. (10 Marks)
b. Explain balanced field length with neat sketch. (06 Marks)

Module-4

- 7 a. Discuss the effects of roll stability on high wing and low wing aircrafts. (08 Marks)
b. Explain longitudinal stability and stability criteria with relevant graphs and equations. (08 Marks)
- 8 a. Explain the Cooper-Harper Pilot rating scale for handling qualities of aircraft. (10 Marks)
b. What is directional stability? Explain directional stability criteria with neat sketch and relevant equations. (06 Marks)

Module-5

- 9 a. Explain electrical power system of an aircraft with neat sketch. (08 Marks)
b. Explain commonly used landing gear configurations in aircrafts. (08 Marks)
- 10 a. What is a Radar? Explain different types of Radar system. (10 Marks)
b. Explain Air conditioning system in aircrafts with a neat sketch. (06 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.