



CBCS SCHEME

15AE661

Sixth Semester B.E. Degree Examination, Jan./Feb. 2021 Unmanned Aerial Vehicles Basics and Applications

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. List and explain the classification of UAV with the examples. (08 Marks)
b. Write the application and importance of UAV. (08 Marks)

OR

- 2 Explain on generic UAV systems with a neat sketch. (16 Marks)

Module-2

- 3 Explain the drag polar of the aircraft at low Re and its importance in designing UAV [with graph]. (16 Marks)

OR

- 4 a. Discuss on the flapping wing mechanism with a sketch. (08 Marks)
b. Derive the range equation for propeller driver aircraft and jet-driver aircraft. (08 Marks)

Module-3

- 5 How to make an aircraft longitudinally stable when it experience a gust? Explain with supporting graph. (16 Marks)

OR

- 6 a. Discuss of static stability and dynamic stability with a neat sketch. (08 Marks)
b. Explain on autopilot and its control systems. (08 Marks)

Module-4

- 7 With neat sketch write short notes on:
a. Rotary engine
b. Gas turbine engine
c. Solar cells
d. Electric motors. (16 Marks)

OR

- 8 a. Explain the maneuver load on the flight with the help of V-n diagram. (08 Marks)
b. Explain sandwich construction techniques. (08 Marks)

Module-5

- 9 Discuss on the data rate reduction. (16 Marks)

OR

- 10 What are the different modes of controlling payloads and air vehicles? Explain. (16 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.