



CBCS SCHEME

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18AE753

Seventh Semester B.E. Degree Examination, June/July 2025 Unmanned Aerial Vehicles

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With respect to timeline, briefly explain the history of development of UAV. (10 Marks)
b. Explain on generic UAV systems with a neat sketch. (10 Marks)

OR

- 2 a. Write a short note on :
i) Small UAVs
ii) Medium UAVs
iii) Large UAVs (10 Marks)
b. Describe the classes of UAV systems (10 Marks)

Module-2

- 3 a. Explain boundary layer concept. (10 Marks)
b. Discuss on the flapping wind mechanics with a sketch. (10 Marks)

OR

- 4 a. Derive an equation for rate of climb for UAV's. (10 Marks)
b. Derive the range equation for propeller drives and Jet propelled aircrafts. (10 Marks)

Module-3

- 5 a. Discuss about longitudinal, lateral and dynamic stability. (10 Marks)
b. Explain Aerodynamic, pitch and lateral control. (10 Marks)

OR

- 6 a. What is autopilot system? Explain inner and outer loops control system. (10 Marks)
b. Explain the sensors supporting the Autopilot. (10 Marks)

Module-4

- 7 a. Discuss about powered lift generated by a ducted fan. (10 Marks)
b. Explain batteries used in UAV application. (10 Marks)

OR

- 8 a. Explain dynamic loading on an UAV's. (10 Marks)
b. Explain different materials used in the construction of UAV. (10 Marks)

Module-5

- 9 a. Explain Mission Planning and control station with block diagram. (10 Marks)
b. Classify the possible payloads of UAV and explain. (10 Marks)

OR

- 10 a. Explain the elements of UAS data link with neat diagram. (10 Marks)
b. Explain different launch and Recovery methods used for UAV's. (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.