



# CBCS SCHEME

18AE753

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## Seventh Semester B.E. Degree Examination, June/July 2024 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. Briefly explain Aviation history in detail. (10 Marks)  
b. Illustrate the overview of UAV system. (10 Marks)

OR

- 2 a. Briefly classify Unmanned Aerial system. (10 Marks)  
b. Describe in detail about the various application of UAVs. (10 Marks)

### Module-2

- 3 a. Derive the basic Aerodynamics equation with neat sketch. (10 Marks)  
b. Illustrate the concept of boundary layer and define boundary layer thickness. (10 Marks)

OR

- 4 a. Derive an equation for range for a propeller driven aircraft. (10 Marks)  
b. Derive an equation for gliding flight and explain. (10 Marks)

### Module-3

- 5 a. Define stability and control. Illustrate the dynamic stability of a UAVs. (10 Marks)  
b. Explain the longitudinal stability in UAVs in detail. (10 Marks)

OR

- 6 a. Brief about the auto piloting technique and explain the control system with block diagram. (10 Marks)  
b. Explain the different sensors supporting autopilot system of a UAV. (10 Marks)

### Module-4

- 7 a. Derive an equation for thrust generation of an UAVs. (10 Marks)  
b. Identify with neat sketch of a rotary engine used in UAVs. (10 Marks)

OR

- 8 a. Discuss the static and dynamic loads acting on aircraft. (10 Marks)  
b. Briefly explain about the aircraft materials used for UAVs. (10 Marks)

### Module-5

- 9 a. Explain the mission planning and control station. (10 Marks)  
b. Describe the launching methods used in UAVs. (10 Marks)

OR

- 10 a. Explain the different Recovery methods used in UAVs. (10 Marks)  
b. Write a note on Data-link function and Attributes of UAVs. (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.