

CBCS SCHEME

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15AE661

Sixth Semester B.E. Degree Examination, June/July 2018 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 With a neat sketch, differentiate between the very small, small, medium and large UAV's. (16 Marks)

OR

- 2 a. Write a short note on aviation history. (08 Marks)
b. With a neat sketch, describe generic UAV system. (08 Marks)

Module-2

- 3 a. Discuss the boundary layer concept? How it effects the performance of the UAV. (08 Marks)
b. Write a short note on Flapping wing. (08 Marks)

OR

- 4 a. Derive the range for a propeller – driven aircraft and jet – propelled aircraft. (08 Marks)
b. Derive the endurance for a propeller – driven aircraft and Jet-propelled aircraft. (08 Marks)

Module-3

- 5 a. With a neat sketch explain the static stability and dynamic stability. (08 Marks)
b. With a neat sketch explain the longitudinal stability concepts. (08 Marks)

OR

- 6 a. Using block diagram of control loop, explain autopilots concept. (08 Marks)
b. Write a short note on sensors supporting the autopilot. (08 Marks)

Module-4

- 7 a. Write a short note on the following : i) The two – cycle engine ii) The rotary engine iii) The gas turbine iv) Electric motors. (08 Marks)
b. Write a short note on solar cells and fuel cells. (08 Marks)

OR

- 8 a. With a neat sketch explain the Maneuver load diagram. (08 Marks)
b. Write a short note on the following : i) Sandwich construction ii) Skin or reinforcing materials iii) Resin materials iv) Core materials. (08 Marks)

Module-5

- 9 a. With the help of block diagram, explain mission planning and control station. (08 Marks)
b. Explain the design issues related to carriage and delivery of Weapons in UAV. (08 Marks)

OR

- 10 a. Explain the UAV launch methods for fixed wing vehicles. (08 Marks)
b. Explain the desirable attributes for a UAV data link. (08 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.