CBCS SCHEME

USN | | | | | | | | | | |

18AE/AS753

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.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. What are the kinds of aircraft which fly without pilots? **(04 Marks)**
b. What are the three types of air vehicle used in UAV system? **(04 Marks)**
c. Given an over view of the generic UAV system. **(12 Marks)**

OR

2 a. Shortly explain the following terms **(06 Marks)**
i) Hale ii) Very small iii) MPCS. **(02 Marks)**
b. State the functions of UAV.
c. Classify and explain the UAV based on range attitude and size. **(12 Marks)**

Module-2

3 a. Briefly discuss the aircraft polar and induced drag. **(10 Marks)**
b. Summarize the concept of the real wing and airplane. **(10 Marks)**

OR

4 a. Derive an equation for range for a jet driven aircraft. **(10 Marks)**
b. Derive an equation for gliding flight. **(10 Marks)**

Module-3

5 a. Derive an expression for longitudinal stability. **(10 Marks)**
b. Define stability and control. Explain static and dynamic stability. **(10 Marks)**

OR

6 a. Define Auto piloting system and explain with block diagram. **(10 Marks)**
b. Explain the different sensors used in UAV's **(10 Marks)**

Module-4

7 a. Develop an equation for thrust generation of an UAV. **(10 Marks)**
b. List the source of electric power. Explain the batteries used in a typical UAV. **(10 Marks)**

OR

8 a. Explain the composite structures using in UAV and explain the manufacturing techniques. **(10 Marks)**
b. Briefly discuss the working of a rotary engine. **(10 Marks)**

Module-5

9 a. Draw and explain the MPCS architecture and its components. **(10 Marks)**
b. With a neat sketch describe the different layers of OSI. **(10 Marks)**

OR

10 a. Compare and explain the different types of payloads of UAV. **(10 Marks)**
b. List the different types of UAV launches and discuss the advantages and disadvantages of RATO launches. **(10 Marks)**

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