

## CBCS Scheme

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15AE32

**Third Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Elements of Aeronautics**

Time: 3 hrs.

Max. Marks: 80

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

**Module-1**

- 1 a. Summarize the major stepping stones to controlled, heavier than air and powered flight with a human pilot. (06 Marks)  
b. Derive and describe the hydrostatic equation and also state the relation between geopotential and geometric altitudes. (06 Marks)

OR

- 2 a. Describe about primary and secondary control surfaces with suitable diagrams. (10 Marks)  
b. With suitable diagrams explain the types of fuselage and wing structures. (06 Marks)

**Module-2**

- 3 a. Discuss about the distribution of temperature in the standard atmosphere. (10 Marks)  
b. With clear illustrations describe about the measurement of airspeed. (06 Marks)

OR

- 4 a. Explain about the NACA 2411 airfoil nomenclature with clear diagram. (06 Marks)  
b. Write notes on : types of drag, centre of pressure, aerodynamic centre and mach number. (10 Marks)

**Module-3**

- 5 a. Summarize about the classification of aircraft power plants. (04 Marks)  
b. Describe the principle of operation of turboprop, turbojet and turbofan engines with neat diagrams. (12 Marks)

OR

- 6 a. Bestow details about Brayton cycle and its applications to aircraft engines. (06 Marks)  
b. Give explanation about Ramjet, Scramjet and thrust augmentation. (10 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.

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**Module-4**

- 7 With suitable diagrams describe in detail about the types of stability. (16 Marks)

**OR**

- 8 a. Write notes on : Stalling, gliding, landing, turning and aircraft maneuvers. (10 Marks)  
b. Give details about effects of correct and incorrect angles of bank (06 Marks)

**Module-5**

- 9 a. Discuss about the types of flight control systems with neat diagrams. (08 Marks)  
b. Elucidate about the oxygen and environmental control system. (08 Marks)

**OR**

- 10 a. With suitable diagrams explain the types of navigation systems. (08 Marks)  
b. Bestow details about aircraft hydraulic and pneumatic system and their applications. (08 Marks)

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