

# CBCS SCHEME

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## Third Semester B.E. Degree Examination, Jan./Feb. 2021 Elements of Aeronautics

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. With neat diagram explain high lift devices. (10 Marks)  
b. Describe helicopter with their parts and functions. (10 Marks)

OR

- 2 a. With neat diagram, explain monocoque, truss, semi-monocoque and geodesic structure. (10 Marks)  
b. Describe metallic and non-metallic materials used for aircraft application. (10 Marks)

### Module-2

- 3 a. Describe aerodynamic center, aspect ratio, mach number and supersonic flight effects. (10 Marks)  
b. Explain lift curve and drag curve. (10 Marks)

OR

- 4 a. Explain Bernoulli's theorem and its application for generation of lift and measurement of air speed. (12 Marks)  
b. Describe centre of pressure and its significance. (08 Marks)

### Module-3

- 5 a. Explain the working principle of turboprop and jet engine with neat labeled diagram. (10 Marks)  
b. Describe the principle of thrust augmentation. (10 Marks)

OR

- 6 a. Explain Brayton cycle and its application to gas turbine engines. (10 Marks)  
b. Explain comparative merits and limitations of different types of propulsion engines. (10 Marks)

### Module-4

- 7 a. Describe forces acting on an aircraft in flight. (06 Marks)  
b. Describe the effects of flaps and slats on lift. (07 Marks)  
c. Explain static and dynamic stability. (07 Marks)

OR

- 8 a. Describe longitudinal, lateral and roll stability. (12 Marks)  
b. Describe altitude effects on power available and power required. (08 Marks)

### Module-5

- 9 a. Explain various types of basic fuel system. (10 Marks)  
b. Describe low pressure pneumatic system with neat labeled diagram. (10 Marks)

OR

- 10 a. Discuss various types of flight control system used in aircraft. (10 Marks)  
b. Describe basic '6' and basic '7' with neat diagram. (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.