

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2289965

Roll No.

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B.TECH.

Regular Theory Examination (Odd Sem V), 2016-17 INTRODUCTION TO AERONAUTICAL ENGINEERING

Time : 3 Hours

Max. Marks : 100

Note: Attempt all Sections. If require any missing data; then choose suitably

SECTION - A

1. Attempt all questions in brief: (10×2=20)
- What is DRAG.
 - Define an AIRCRAFT.
 - What do you mean by the term VTOL.
 - Which are the four forces which balance the airplane.
 - Which one of the three axis pass through the nose of the airplane.
 - What do you understand by a Convergent-divergent nozzle.
 - What is DGCA

- What do you understand by FRP
- State out of the two cycles Brayton cycle and Otto cycle, which one is used in turbo-jets.
- Briefly state the functions of FUELS in aero-engines.

SECTION - B

2. Attempt any three of the following (3×10=30)
- Differentiate between an aeroplane and an airship.
 - Draw the airplane axis system and show the Forces and Moments.
 - What do you understand by the term 'stable airplane'.
 - Draw a section of airplane WING and show its structural components.
 - Describe the various type of actuating systems of control surfaces.

SECTION - C

3. Attempt any one part of the following: (1×10=10)
- Draw a neat diagram and show and explain any ten parts of airplane and briefly state their function.
 - Differentiate between non-air breathing and air-breathing propulsive system.
4. Attempt any one part of the following: (1×10=10)
- Define LIFT? Explain how wings in an airplane generate lift.

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- b) Explain various types of DRAGS.
5. Attempt any one part of the following: **(1×10=10)**
- a) State show the position of center of gravity with respect to C.P. effects the stability of the airplane.
- b) Define center of pressure and Aerodynamic center and their importance.
6. Attempt any one part of the following: **(1×10=10)**
- a) Name any three metallic and any three non-metallic materials used for airplane engines. Give their application areas with reasons.
- b) Name any three metallic and any three non-metallic materials used for airplane structures. Give their application areas with reasons.
7. **Attempt any one part of the following: (1×10=10)**
- a) Draw a neat sketch and label the various components of aircraft basic electrical system having AC and DC equipments
- b) Draw a neat sketch and label the various components of aircraft basic hydraulic system.
