

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER – VIII. EXAMINATION – WINTER 2016

Subject Code: 180101

Date: 21/10/2016

Subject Name: Aircraft Design - II

Time: 02:30 PM to 05:30 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Attain question 1 and 2-A in drawing Sheet. Don't make free hand sketches in drawing sheets.**

- Q-1 A Draw a layout of starboard (only right side) wing designed for jet transport aircraft. Wing loading is 120 lbs/ ft². Maximum takeoff weight is 220200 lbs. Maximum speed is 0.89 mach. Take appropriate taper and Aspect ratio. Mention all primary and secondary control surface on the wing. 07
- Q-1 B Only draw hull of a sea plane. Mention all types of required angles for safe take off, landing and minimum drag. Mention possible location of engine/s and tail. Don't describe anything. 07
- Q-2 A Only draw possible jet VTOL configurations. 07
- B What are considerations to locate guns on ground attack aircrafts? 07
- OR
- Q-2 B Draw and explain under carriage retraction geometry in cargo aircrafts. 07
- Q-3 A Very shortly explain structural considerations to provide sustainability and crashworthiness in supersonic jet transport aircrafts against battle damages. 07
- B Describe design considerations 07
- OR
- Q-3 A How will you optimize ground turning radius of tricycle type landing gear configurations? 07
- B How will you minimize wave drag in a supersonic jet fighter aircrafts? Mention all possible solutions discussing aerodynamic considerations. 07
- Q-4 A Explain entire process of engine selection. 07
- B Differentiate between configurations of a utility aircrafts and sports aircrafts. 07
- OR
- Q-4 A Explain how will you improve design to maximize RCS of civil aircraft? 07
- B How will you protect your aircrafts from gust loads and maneuvering loads in aerobatic aircrafts? 07
- Q-5 A With neat sketch explain how a conventional helicopters control maneuvers around all three axes? 07
- B Explain airfoil selection procedure for wing and tail planes with neat diagrams. 07
- OR
- Q-5 A How will you select location and size of canard? 07
- B How will you select tail volume and control surface sizing? 07
