

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3170101****Date:10/12/2021****Subject Name:Aircraft Design****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		Marks
Q.1	(a) Shortly Explain Conceptual Design Procedure.	03
	(b) Explain the following design terms with example:- (1) Range (2) Endurance	04
	(c) Explain aircraft development process with block diagram	07
Q.2	(a) Explain importance of structure factor in aircraft design.	03
	(b) How will you determine payload for the aircraft conducting long range flight?	04
	(c) Explain advantages and disadvantages of different types of aft-tail configurations with figure	07
OR		
	(c) With the help of block diagram briefly explain about three stage of aircraft design.	07
Q.3	(a) Explain mission profile briefly	03
	(b) Shortly explain engine selection process	04
	(c) Explain complete procedure for estimation of take of weight calculation	07
OR		
Q.3	(a) Explain the significance of taper ratio	03
	(b) Define radar and infrared detestability	04
	(c) Discuss effect of wing loading on flight performance	07
Q.4	(a) Explain method of landing gear arrangement	03
	(b) Explain Statistical Group weight Method	04
	(c) How will you estimate drag for your require fuselage design?	07
OR		
Q.4	(a) How will you select chord and span of ailerons and rudder?	03
	(b) How will you choose airfoil section of a horizontal stabilizer? Please write valid comment with justification	04
	(c) Discuss Aerodynamic considerations during design procedure with appropriate figure.	07
Q.5	(a) What is the function of winglet?	03
	(b) Explain Fuselage loft verification process briefly	04
	(c) Explain the significance of different fuselage shapes using neat sketch.	07
OR		
Q.5	(a) Explain circle – to- square adapter in lofting procedure.	03
	(b) Explain Conic lofting procedure	04
	(c) Discuss the effects of taper ratio and aspect ratio on flight performance.	07