

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER– IV (New) EXAMINATION – WINTER 2019****Subject Code: 2140103****Date: 14/12/2019****Subject Name: Aircraft Systems, Instruments and Maintenance****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. Use drawing instruments to make figures.

		MARKS
<b>Q.1</b>	(a) Only draw dial of Air Speed Indicator showing all speed ranges.	<b>03</b>
	(b) Explain blockage errors of mach meter with neat sketch.	<b>04</b>
	(c) With neat sketch explain function of Attitude Indicator.	<b>07</b>
<b>Q.2</b>	(a) Differentiate between Gyroscopic precession and Rigidity in space.	<b>03</b>
	(b) Explain function of Directional Gyro Indicator with neat sketch.	<b>04</b>
	(c) Explain function of mechanical tachometer with neat sketch.	<b>07</b>
	<b>OR</b>	
	(c) Explain importance of CHT gauge and EGT gauge with respect to piston prop engine and turboprop engine.	<b>07</b>
<b>Q.3</b>	(a) Shortly explain function of trim position indicator.	<b>03</b>
	(b) With neat sketch explain dual control column mechanism.	<b>04</b>
	(c) Differentiate between air brakes and spoiler controls.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) With neat sketch explain function of Bell Crank, Control Horns, and Servo Arms.	<b>03</b>
	(b) Explain horizontally opposed and radial engines with neat sketches.	<b>04</b>
	(c) Discuss different types of actuators with neat sketches.	<b>07</b>
<b>Q.4</b>	(a) With neat sketch explain how turnbuckle is locked in cable control system?	<b>03</b>
	(b) Differentiate between push rods and cable control mechanism of primary control surfaces.	<b>04</b>
	(c) With neat sketch explain function of turbo shaft engine.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Shortly explain function of dowel.	<b>03</b>
	(b) With neat sketch explain any two types of thrust augmentation system.	<b>04</b>
	(c) With neat sketch explain hydraulic system of a conventional under carriage retraction system.	<b>07</b>
<b>Q.5</b>	(a) Shortly explain thrust vectoring system with neat sketch.	<b>03</b>
	(b) Only draw fuel supply system of a low wing aircraft where engine location is there elevated than fuel tanks.	<b>04</b>
	(c) With neat sketch explain cabin cooling system of aircraft.	<b>07</b>

**OR**

- Q.5** (a) Only draw a diagram of bleed air supply system using for cabin pressurization. **03**
- (b) Draw and explain internal design of a gas turbine engine oil tank. **04**
- (c) What is Manifold pressure? Mention its location. What is the need of Manifold pressure gauge? **07**

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