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GUJARAT TECHNOLOGICAL UNIVERSITYB. E. - SEMESTER – IV • EXAMINATION – WINTER 2012

Subject code: 140103 Date: 01/01/2013 **Subject Name: Aircraft Systems and Instruments** Time: 02.30 pm - 05.00 pm **Total Marks: 70 Instructions:** 1. Attempt any five questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks. 0.1 Which are power plant instruments in the aircraft? Give the used in 07 significance of each Instrument. Which type of sensors is each instrument (b) What do you understand by Head up display? Explain with figure and 07 examples. What is "Basic T flight instrument grouping" explain with figure. **Q.2** What are the properties of gyroscope? With the help of rough sketch 07 explain different parts of a gyroscope? What is meant by rigidity and precession? What are limitations of a free gyroscope? (b) Explain power plant instrument grouping with figure for four engine 07 aircraft in details. OR **(b)** Why heaters are provided in pitot-static (probe) head with figure of D.C. 07 circuit. Explain the circuit. 0.3 What is flight management system? What are its advantages? With 07 the help of diagram explain Flight Management System & data interfacing. **(b)** Explain pneumatic type altimeter, its operations and construction with 07 figure. OR What is direction indicator? With the help of simple diagram describe a Q.3 07 direction indicator. How do we control drift, & do gimbal ring balancing? What is fire protection system? With the help of diagram explain any **07** fire protection system used in modern aircraft. **Q.4** Which are different types of turbine engines? With the help of rough **07** sketch explain anyone of them. (b) Describe RPM indicator using principle of "Generator and Indictor 07 system" with figure. (a) Explain different types of shimmy dampers and function of dampers. 07 **Q.4** Explain EGT operation. Explain its sensor with principle and types with 07 **Q.4 (b)** figures. Q.5 Briefly describe different types of gas turbine starters, show complete 07

circuit and starter function of generator system.

	(b)	Explain pneumatic type horizon gyroscope with operation and figure.	07
		OR	
Q.5	(a)	Describe icing effect on aircraft flight with figure and suggest different	07
		methods used for prevention.	
	(b)	Explain aircraft communication system and describe HF, VHF with figure showing operation and navigation equipment.	07
