

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem - IV Examination - June- 2011

Subject code:140103

Subject Name: Aircraft Systems & Instruments

Date:15/06/2011

Time: 10.30 am – 01.00 pm

Total Marks: 70

Instructions:

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks

- Q-1.** (a) Which are the two main type of displays? Give examples of each type of displays. How do we achieve high-range long-scale displays? How scale and operating ranges are decided? Explain with the help of simple diagrams. 7
- (b) With the help of simple diagram explain Head Up Display (HUD). What are it's advantages & Disadvantages over CRT display? 7
- Q-2.** (a) Which are the flight instruments in the aircraft? In which two ways are they grouped? Briefly give use of each instrument. In case of their failure, which are the other standby equipments for each type of instruments? 7
- (b) Which are power plant instruments in the aircraft? Give the significance of each instrument. Which type of sensors are used in each instrument? 7
- OR**
- (b) With the help of diagram explain basic air data system. How do we correct instrument, position, compressibility, & air density errors? 7
- Q-3.** (a) What is the significance of angle of attack sensing system? With the help of diagram explain stick-shaker system to warn about aircraft approaching dangerous stall angle. 7
- (b) What are the properties of gyroscope? With the help of rough sketch explain different parts of a gyroscope? What is meant by rigidity and precession? What are limitations of a free gyroscope? 7
- OR**
- Q-3.** (a) What is direction indicator? With the help of simple diagram describe a direction indicator. How do we control drift, & do gimbal ring balancing. 7
- (b) With the help of diagram explain typical digital Air Data Computer. Which all systems/ sub systems are given input from ADC and for what purpose? 7
- Q-4.** (a) Which are the different methods in which fuel quantity is measured? What are their advantages and disadvantages? With the help of diagram explain basic capacitance type fuel quantity indicating system. 7
- (b) What is flight management system? What are it's advantages? With the help of diagram explain Flight Management System & data interfacing. 7
- OR**
- Q-4.** (a) What is fire protection system? With the help of diagram explain any fire protection system used in modern aircraft. 7
- (b) Which are different type of turbine engines? With the help of rough sketch explain any one of them. 7

- Q-5. (a)** Which are different type of reciprocating engines? What should be the characteristics of good fuel? What precautions should be taken to maintain the engine in good working condition? 7
- (b)** Differentiate between different type of turbine engines. When do we require multiple engines? 7

OR

- Q-5. (a)** What is ignition & starting system? Explain any of the system used in starting the aircraft engine. 7
- (b)** What are different hydraulic components and their operating principles? Explain them in brief. 7
