

# GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-V<sup>th</sup> Examination December 2010

**Subject code: 150105      Subject Name: Operation & Maintenance of Aircraft**

**Date: 20 /12 /2010**

**Time: 03.00 pm - 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.

- Q.1** (a) Describe the starting procedure of gas turbine engine with starting sequence figure. What all the precautions are to be observed before starting the engine? Which are the occasions where ground run is required? **07**
- (b) Describe the actual stages in the overhauling of an engine. What is meant by Time Between Overhauls and who decides it? **07**

- Q.2** (a) Explain requirement of gas turbine lubricant. Which are the desirable characteristics of lubricating oil? **07**
- (b) What is thrust augmentation? How is water injection used for thrust augmentation? Explain in detail. **07**

**OR**

- (b) Explain after burner system and nozzle of general electric J-85 engine with fig of afterburner and fuel system components. **07**

- Q.3** (a) Which are the different types of welding used in the repair of aircraft? What precautions should be taken to ensure that the weld work is perfect? Explain method of repair of fuel and oil tanks by welding. **07**
- (b) Why pressurization of cabin is required? Describe any pressurization system with figure. **07**

**OR**

- Q.3** (a) With the help of diagrams explain the functioning of weather radar. What type of beam width is used for this radar? What is it's necessity in the aircraft? **07**
- (b) What is a transceiver? What are its advantages over separate transmitters and receiver? Explain block diagram of any transceiver. **07**

- Q.4** (a) What is the purpose of measuring exhaust gas temperature? Explain any instrument with the help of a diagram as to how it is used for measuring EGT. **07**

- (b) Which all DC power sources are available in the aircraft? What precautions should be taken to maintain lead-acid and nickel-cadmium batteries in good working condition? **07**

**OR**

- Q.4** (a) What is the purpose of external power supply in the aircraft? Why is it advisable to start the engine by external power supply than it's own batteries? How do we ensure that the batteries are used only for vital services? **07**
- (b) What is the purpose of 3 Phase tachometer system? Explain with the help of a diagram. Why do we use 400 Hz instead of 50 Hz commonly used in our daily life? **07**

- Q.5 (a)** What is engine indicating and crew alerting system (EICAS)? What all parameters are displayed by this system? How it forms part of Electronic Control for Aircraft Monitoring (ECAM)? **07**
- (b)** What is radar? Which are the different types of radars? What all the information could be obtained from radars? With the help of a simple block diagram explain any radar. **07**

**OR**

- Q.5 (a)** What is a starter generator? With the help of diagram explain any starter generator. What other ignition systems are used to start an aircraft engine? **07**
- (b)** What is aircraft contamination? How are the sensors provided to monitor the airframe contamination? How can the airframe contamination be dangerous? What is fuel contamination and how it is prevented? **07**

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