

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III • EXAMINATION – SUMMER 2013

Subject Code: 130104**Date: 04-06-2013****Subject Name: Introduction to Profession****Time: 02.30 pm - 05.00 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) Which are the main parts of the aircraft and what is their role? How do we generate lift? **07**

(b) Which are the different forces acting on the aircraft body including the one resulting in stress and bending moment? How are they controlled? **07**

Q.2 (a) Which are different propulsion systems used in the aircraft? Classify gas turbine engines. What are their relative merits and demerits? **07**

(b) With the help of figure explain the terminology used in aerofoil. Which are different types of flows? Explain with the help of figures. **07**

OR

(b) With the help of diagram explain the difference between angle of attack and angle of incidence? How is the flight affected by increasing and decreasing these angles? **07**

Q.3 (a) How do we design aircraft structure? Which are different elements used for construction of aircraft body? Which are different type of structures used normally. **07**

(b) Which are different instruments used in the cockpit to know the speed of aircraft, direction in which aircraft is flying, altitude, rate of descent/ascent, attitude of aircraft, fuel position, engine temperatures etc? **07**

OR

Q.3 (a) What is the purpose of a radio receiver in the aircraft? With the help of simple block diagram explain a radio receiver. What is AGC and squelch? **07**

(b) What is the purpose of radio transmitter in the aircraft? With the help of simple block diagram explain a radio transmitter. How do we ensure that the frequency of transmitter do not change every now and then? **07**

Q.4 (a) What is air traffic control system? How is flying regulated/ controlled by them? Which all facilities are available with the ATC to provide good service? **07**

(b) In initial days of flying when radio communication was installed in the aircraft, many difficulties came across. What were these difficulties and how were they overcome? **07**

OR

Q.4 (a) How do Non Directional Beacon (NDB) & Very High Frequency Omnidirectional Range (VOR) provide navigation facility to the aircraft? Explain them in detail? What are corresponding airborne and ground equipments? **07**

(b) Which are different equipments/ navigational aids with which we help the aircraft to land under poor visible conditions? Explain Instrument Landing System (ILS). **07**

Q.5 (a) How the course (direction) is displayed on Course Deviation Indicator (CDI) and Horizontal Situation Indicator (HSI) ?. Briefly explain with the help of diagram. **07**

(b) How does performance of aircraft vary with the altitude? What effect, lower atmospheric pressure has on the control surface. What is the effect of cloud, rain, thunder storm, turbulence, lightening and other atmospheric disturbances on the flight? **07**

OR

Q.5 (a) What role do the electromagnetic waves play in direction finding? What is cardioid? Which are the sources of error in ADF? How do we minimize the error? **07**

(b) What is a radar? How do we classify radars? What is the principle of finding the range and direction of the aircraft or any other object? **07**
