

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2023**

**AIRCRAFT INSTRUMENTS**

[Maximum Marks: 100]

[Time: 3 Hours]

**PART-A**

[Maximum Marks: 10]

I. (Answer *all* questions in one or two sentences. Each question carries 2 marks)

1. List any four types of displays used in aircrafts.
2. Define Mach number.
3. Define the term pitch and turn in gyro instruments.
4. Define Tilting freedom of gyroscope.
5. List any two mandatory parameters recorded in aircrafts. (5 x 2 = 10)

**PART-B**

[Maximum Marks: 30]

II. (Answer *any five* of the following questions. Each question carries 6 marks)

1. Explain how Gear mechanism is used in aircraft instruments.
2. With neat sketch explain LED display.
3. Explain the working principle of Aneroid barometer.
4. Describe the construction and working of Vertical speed indicator.
5. Explain Pneumatic method of driving gyroscopic rotor.
6. Explain working principle of electrically operated engine speed indicator.
7. Describe Immersion type thermocouples used in aircrafts. (5 x 6 = 30)

**PART-C**

[Maximum Marks: 60]

(Answer *one* full question from each Unit. Each full question carries 15 marks)

**UNIT – I**

- III. a. Explain how hair springs are used for controlling applications in instruments. (8)
- b. Describe Digital displays used in aircrafts. (7)

**OR**

- IV. a. With necessary diagrams, explain Circular scale displays. (8)
- b. Draw and explain Coloured displays. (7)

**UNIT – II**

- V. a. Explain the construction and working of Altimeter. (8)
- b. Explain the working principle of Mach meter. (7)

**OR**

- VI. a. With neat diagram, explain the working of Air speed indicator. (8)
- b. Describe Aneroid barometer. (7)

**UNIT- III**

- VII. a. Describe the fundamental properties of gyroscope. (8)
- b. Explain Altitude indication. (7)

**OR**

- VIII. a. Explain Degrees of freedom of gyroscope. (8)
- b. Explain Tacho probe indicator system in aircrafts. (7)

**UNIT - IV**

- IX. a. Explain the working principle of Inductor pressure transmitter. (8)
- b. With neat sketch explain the construction and working principle of Accelerometer used in aircraft. (7)

**OR**

- X. a. Explain the working of Capacitance type fuel gauge system used in aircrafts. (8)
- b. Explain working of Radiation pyrometer for exhaust gas temperature measurement. (7)

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