

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2022**

**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. Define backlash or lost motion.
2. Define Mach Number.
3. List different types degree of freedom of Gyroscope.
4. Define the term turn in Gyro instruments.
5. Write the principle of thermocouple. (5 x 2 = 10)

**PART-B**

[Maximum Marks: 30]

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

1. Explain Gear mechanism in indicating instruments.
2. Explain the working of Aneroid Barometer.
3. Draw and explain LCD display.
4. Compare surface and immersion type thermocouple.
5. Describe Rigidity and Precession of Gyroscope.
6. Explain pitot pressure.
7. Describe trace recording in flight data recorder. (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 temperature compensation using Bimetal strip in measuring instruments. (8)  
(b) Describe lever mechanism with necessary diagrams. (7)

**OR**

- IV. (a) Describe coloured display and dual indicator display. (8)  
(b) Explain straight scale display with necessary diagrams. (7)

**UNIT – II**

- V. (a) Describe the working of air speed indicator. (7)  
(b) Explain the construction and working of mach meter. (8)

**OR**

- VI. (a) Explain the working of air speed indicator. (7)  
(b) Explain the heating circuit arrangement in pitot tube. (8)

**UNIT- III**

- VII. (a) Draw and explain the construction and working of Tachoprobes. (8)  
(b) Explain gyro horizon. (7)

**OR**

- VIII. (a) Explain working principle of electrically operated engine speed indicator. (8)  
(b) Describe electric and pneumatic methods of operating gyroscopic instruments. (7)

**UNIT - IV**

- IX. (a) Explain radiation pyrometer for exhaust gas measurement. (7)  
(b) Explain electromagnetic recording. (8)

**OR**

- X. Explain the working of capacitance type Fuel gauge system used in aircraft. (15)

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