

**B.Tech. AEROSPACE ENGINEERING  
(BTAE)**

**Term-End Examination**

**June, 2016**

00450

**BAS-019 : AIRCRAFT INSTRUMENTS**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any seven questions. All questions carry equal marks. Use of scientific calculator is permitted.*

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1. (a) Draw a block diagram of the Inertial Navigation system and explain its various parts.
- (b) Describe the construction of a fuel flowmeter indicator and explain the basic principle of operation. 5+5
2. (a) Discuss the importance of fuel measurement both from the point of view of quantity and rate of flow.

(b) Define any *five* of the following terms :

- (i) Pressure altitude and Indicated altitude
- (ii) Mach Number and Critical Mach Number
- (iii) Aircraft Horizon
- (iv) Magnetic Compass
- (v) VOR
- (vi) TACAN 5+5

3. (a) Describe how rate gyro may be utilised to sense both banking and rate of turn.

(b) Give the relationship between Celsius, Fahrenheit and Absolute (Kelvin) temperatures. Convert 60°C into Fahrenheit scale and Absolute scale. 5+5

4. (a) Draw a neat sketch of an exhaust gas temperature indicator and explain its different parts.

(b) List any three kinds of probes used for detecting temperature. Explain any one of them in brief. 5+5

5. (a) Define the Marker Beacon and explain its utility.

(b) Draw the block diagram of a goniometer and explain it. 5+5

6. (a) What are the advantages of electrical engine speed indicators ?
- (b) Describe in detail any one form of engine speed indicator. What maintenance is required for this instrument ? 5+5
7. (a) Give a suitable classification of types of instruments used in aircraft.
- (b) Explain the principle of ratiometer indicating system with specific reference to the ratiometer pressure gauge. 5+5
8. (a) Why is a tachometer important in the operation of an aircraft engine ?
- (b) Explain the operation of an AC tachometer system. 5+5
9. (a) Describe the construction and working of an altimeter.
- (b) Draw a block diagram of INS. 5+5
10. Explain the working principle of a landing gear with a neat sketch. 10
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