

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

**Term-End Examination**

00203

June, 2018

**BAS-019 : AIRCRAFT INSTRUMENTS**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : Answer any seven questions. All questions carry equal marks.*

1. Describe, in brief the following : 5×2=10
- (a) Trunnion
  - (b) Thermal relief valve
  - (c) Megger
  - (d) RMI
  - (e) Isogonic line
2. (a) Define "Mach number". How is  $\left(\frac{P_s - P_t}{P_s}\right)$  measured in Mach meter ? 5
- (b) Describe the operation of a Tachometer (rpm indicator) with a neat schematic diagram. 5

3. (a) With sketch, describe the construction of a vertical speed indicator. 6
- (b) Discuss why a vertical speed indicator is not affected by pressure error. 4
4. (a) Give a suitable classification of instruments used in an aircraft. 3
- (b) Explain the principle of ratiometer indicating system with specific reference to ratiometer pressure gauge. 7
5. (a) Why is an air thermometer considered a vital piece of instrument for an aircraft ? 3
- (b) Describe the working of a transmitting outside thermometer. How should the indicated temperature be corrected for the speed of the aircraft ? 7
6. (a) What is a synchro system ? 3
- (b) Describe in detail the functioning of an Autosyn system. 7
7. What are the main components of a basic electronic autopilot ? Discuss the need for a feedback system for each correction command signal in the autopilot. 10

8. (a) Describe the black box recorder of an aircraft in detail. 5
- (b) Discuss speed control system in an automatic flight system of an aircraft. 5
9. Explain, with diagram, the salient features of a fuel gauging system used in a modern aircraft. 10
10. Write short notes on the following :  $2 \times 5 = 10$
- (a) Magnetic Compass
- (b) Flux Meter
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