

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

Term-End Examination

June, 2013

BAS-019 : AIRCRAFT INSTRUMENTS

Time : 3 Hours

Maximum Marks : 70

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

1. (a) What is the advantage of electrical engine speed indicators ? 3
(b) Describe in detail any one form of engine speed indicator. What maintenance is required for this instrument ? 7
2. (a) Give a suitable classification of types of instruments used in aircraft. 3
(b) Explain the principle of ratiometer indicating system with specific reference to the ratiometer pressure gauge. 7
3. What is the principle of a thermocouple ? 10
Describe a typical thermocouple installation for measuring cylinder head temperature.

4. (a) Why an air thermometer is considered as a vital piece of instrument for an aircraft ? 3
- (b) Describe the functioning of a transmitting outside-air thermometer. How should the indicated temperature be corrected for the speed of the aircraft ? 7
5. Explain the underlying principles of pitot static type of air speed indicator. What precautions should be taken for the installation of pressure heads to ensure that they give correct readings ? 10
6. (a) What is a synchro system ? 3
- (b) Describe in detail the functioning of an Autosyn system. 7
7. (a) What is the ICAN standard atmosphere ? 3
- (b) How does an altimeter function ? How is it checked for calibration ? 7
8. What are the principal components of a basic electronic autopilot ? What is the need for a feedback system, for each correction command signal in the autopilot ? 10
9. (a) State the purpose of gyro horizon and directional gyro. 3
- (b) Explain the operation of a capacitor type fuel quantity indicator. 7

10. (a) What is the purpose of the air data computer CADC ? 3
- (b) Describe in detail the functioning of the yaw stability augmentation system. 7
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