

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

Term-End Examination

December, 2012

BAS-019 : AIRCRAFT INSTRUMENTS

Time : 3 Hours

Maximum Marks : 70

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

1. (a) Why is the engine speed indicator important to the pilot ? 3
(b) Describe an engine speed indicating system suitable for twin engine aircraft. 7

2. (a) Discuss the importance of fuel measurement both from the point of view of quantity and rate of flow. 3
(b) Explain with the help of a diagram, the operation of float operated fuel contents gauge of mechanical type. 7

3. What is the purpose of fuel flow meter ? How does it differ from the purpose of fuel contents gauge meter ? Describe a method for ensuring accuracy of fuel contents gauge readings. 10

4. (a) The capillary tube of an oil temperature thermometer is found to be too long. What should be done ? 3
- (b) Describe a resistance thermometer, the circuit of which contains a Wheatstone bridge. Explain the functioning of the circuit with the help of a diagram. 7
5. What instruments are usually connected to the pitot static system of an aircraft ? Describe a method of calibrating this system. 10
6. (a) Why is a tachometer important in the operation of an aircraft engine ? 3
- (b) Explain the operation of an ac tachometer system. 7
7. Describe in detail a primary servo unit and its applications. What is the purpose of a slip clutch on a servo ? 10
8. (a) For what indication is the selsyn system useful ? 3
- (b) Give a description of the principle and functioning of artificial horizon. 7

9. (a) What is the function of the digital data bus as it pertains to the FMS ? 3
- (b) What is a strapdown gyro ? Explain its functioning with the help of a diagram. 7
10. (a) What type of information is displayed by EICAS ? 3
- (b) Explain in detail the functioning of a typical Flight Director System. 7
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