

**B.TECH. IN AEROSPACE ENGINEERING
(BTAE)**

Term-End Examination

June, 2012

**BAS-011 : Aircraft Systems and Airworthiness
Requirements**

Time : 3 hours

Maximum Marks : 70

*Note : Question No.1 is compulsory. Answer any six questions
from Q.2 to Q.9*

1. Fill in the blanks (*any ten*) **1x10=10**
- (a) Elevons combine the function of _____
and _____.
 - (b) Flaperons combine the function of
_____ and _____.
 - (c) As the temperature of gas increases viscosity
of gas _____.
 - (d) Desiccant is used to absorb _____.
 - (e) Operating DC Voltage for an aircraft is
_____.
 - (f) Atmospheric air consists of _____ %
of O₂ by weight.
 - (g) Pitot Static measures _____ and
_____ pressures.
 - (h) Speed of aircraft is measured by _____.

- (i) Class B fire consists of burning of _____.
- (j) Constantan is an alloy of _____ and _____.
- (k) Full form of CAR is _____.
- (l) Full form of MIL is _____.
2. (a) What are the various components of hydraulic system ? 4
- (b) Why are filters required in hydraulic systems ? Where are they located in the system ? 3
- (c) What are single acting and double acting actuators ? 3
3. (a) Explain briefly the different components of electrical power system in an aircraft. 4
- (b) Describe in brief the working principle of DC generator. 3
- (c) What is rectification circuit ? Give reason why smaller aircraft does not operate on AC voltage. 3
4. (a) What are the symptoms of hypoxia at various altitudes ? 4
- (b) Explain chemical oxygen generator system. 4
- (c) What is cabin pressure differential and why it is not allowed to exceed a given value ? 2

5. (a) Explain with a diagram the functioning of vapour cycle cooling system. 4
(b) Describe briefly the sources of pressurization in an aircraft. 3
(c) What are the different components of pressurization system in an aircraft ? 3
6. (a) Explain briefly the various components of aircraft fuel system. 5
(b) Describe the purpose and functioning of ejector pump. 3
(c) What is meant by fuel Jettison and why it is required ? 2
7. (a) What are the essential conditions required for fire and what are the different types of fire protection systems ? 3
(b) Explain the functioning of Thermo Couple System and Kidde fire Protection System. 4
(c) What are the objectives of CAR, JAR and ICAO ? 3
8. (a) What is the difference between Systron - Donner and Lindberg fire Protection Systems ? 2
(b) Explain with a sketch the working principle of photo electric detectors and ionization type smoke detectors ? 5
(c) Describe the working principle of Ice detector system. 3

9. (a) Explain with a neat sketch push pull rod and cable pulley flight control systems. 4
- (b) Enumerate the difference between power assisted and power operated hydraulic systems. 2
- (c) Describe the main characteristics of a hydraulic fluid. 4
-