

00102

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

Term-End Examination

December, 2011

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

Time : 3 hours

Maximum Marks : 70

*Note : Question no. 1 is compulsory. Answer any 6 questions
from Q. 2 to Q. 9.*

1. Fill in the blanks (*any ten*) : **1x10=10**
- (a) Ruddervators combine the function of _____ and _____ for an aircraft.
 - (b) During landing of aircraft _____ and _____ are deployed to increase lift of an aircraft.
 - (c) Bladder of hydraulic reservoir is made up of _____ rubber.
 - (d) Operating AC voltage and frequency for an aircraft are _____ and _____.
 - (e) Electrolyte of lead consists of _____ and _____.
 - (f) Atmospheric air consists of _____ % of oxygen by volume.

- (g) Absolute pressure = _____ + _____.
- (h) Pitot Static System measures _____ and _____ flight data for an aircraft.
- (i) Class C fire consists of burning of _____ fires.
- (j) Chromel is an alloy of _____ and _____.
- (k) Full form of ICAO is _____.
- (l) Full form of JAR is _____.
2. (a) What are the advantages and disadvantages of hydraulic system ? 3
- (b) Explain with the neat sketch the application of sequence valve in landing gear system of an aircraft. 4
- (c) What is the purpose of pneumatic system and why it is required in an aircraft ? 3
3. (a) Explain the different sources of pneumatic power in an aircraft. 3
- (b) Explain briefly the various types of power generators used in aircraft. 3
- (c) Explain briefly the different types of batteries used in an aircraft. 4

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| 4. | (a) | Why oxygen system is required in an aircraft ? | 2 |
| | (b) | Explain with a diagram the working of pneumatic boot de-icing system. | 4 |
| | (c) | What is environmental control system ? Why it is required in an aircraft and what are the factors that affect cabin / cockpit temperatures ? | 4 |
| 5. | (a) | Explain the working of Air cycle cooling systems. | 5 |
| | (b) | What is Aircraft Pressurization System and why it is essential for an aircraft ? | 2 |
| | (c) | What is Type certificate ? | 3 |
| 6. | (a) | What is the purpose of fuel system ? | 2 |
| | (b) | Explain the different types of fuel systems. | 4 |
| | (c) | Explain briefly about various types of fuel tanks of an aircraft. | 4 |
| 7. | (a) | What is fuel Contamination ? | 2 |
| | (b) | Explain briefly about various agents which cause fuel contamination. | 3 |
| | (c) | With a neat sketch explain the working of Systron-Donner fire Protection System. | 5 |

8. (a) What are the various fire protected areas in aircraft ? 2
- (b) What are the different types of fire extinguishing agents used in aircraft ? 4
- (c) What are the disadvantages of formation of ice on aircraft ? 4
9. (a) What is a flight control system ? 2
- (b) With a neat diagram show the various control surfaces of an aircraft. 2
- (c) Using a co-ordinate system, explain roll, pitch and yaw of an aircraft. 3
- (d) Explain the functioning of primary and secondary control surfaces. 3
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