

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

**Term-End Examination
December, 2015**

**BAS-023 : AIRCRAFT DESIGN / LAUNCH
VEHICLE / ROCKET DESIGN**

Time : 3 hours

Maximum Marks : 70

*Note : Attempt any **seven** questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. Give a few applications of the following aircraft parts : *5×2=10*
 - (a) Flaps
 - (b) Ailerons
 - (c) Spoilers
 - (d) Tabs
 - (e) Tail

2. Explain the different types of drag experienced by an aircraft. Also draw the drag divergence curve. *10*

3. Discuss in detail, the determination of take-off weight of an aircraft. *10*

4. Describe in detail an Airplane Design Tree. 10
5. (a) Which engine is suitable for higher altitudes ? Draw suitable curves. 5
- (b) What is collective pitch and pitch of the propeller ? 5
6. Derive the expression for radius of turn and critical velocity of an aircraft. 10
7. (a) How will you select the type of landing gear in aircraft design ? Discuss in brief. 5
- (b) Explain in brief, the working of any one type of compressor used in gas turbine engine. 5
8. Compare the following :
- (a) High wing and Low wing airplane configuration. 5
- (b) Dihedral and Anhedral wings along with examples. 5
9. Enumerate the different types of wing shapes. Which is the best possible amongst them and why ? Also explain delta wings and their applications. 10
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