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BAS-023

00482

B.Tech. AEROSPACE ENGINEERING (BTAE)

Term-End Examination

December, 2016

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

Time : 3 hours *Maximum Marks : 70*

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

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1. (a) What are the reasons behind giving twist to main wing ? Explain with neat sketch. 5

   (b) Explain different types of air inlets for subsonic and supersonic aircraft. 5

2. Describe, in detail the tree of an Airplane Design process. 10

3. What is the function of a wing in the aircraft ? Draw different kinds of wing arrangements commonly used in airplanes, clearly describing usage/merits/demerits of each. 10

4. What is the function of a tail in the aircraft ? Draw different kinds of tail arrangements commonly used in airplanes and state the advantages and disadvantages of each. 10

5. Describe, in detail high lift devices and their effect on maximum lift co-efficient. 10

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

7. Discuss the effect of stall speed, wing loading, head wind and tail wind on take-off and landing performance of an aircraft. 10

8. Discuss the merits and demerits of the following : 10
   (a) high wing configuration
   (b) mid wing configuration
   (c) wing mounted engine
   (d) fuselage mounted engine

9. Compare the root and tip stall of a wing in an aircraft with neat sketches. 10