



(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 148852

Roll No.

--	--	--	--	--	--	--	--	--	--

B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
STRUCTURAL DESIGN & TESTING

Time : 3 Hours]

[Total Marks : 100

Note : Answer all five questions.
(Choice and marks are indicated below)

- 1 Answer any two parts of the following : **2×10=20**
 - (a) Briefly describe the classification of airplanes in terms of power plants and configuration.
 - (b) Describe the following terms :
 - (i) Maximum speed
 - (ii) Maximum range
 - (iii) Reynolds No.
 - (iv) Mach No.
 - (v) Rate of climb.
 - (c) Describe the method for positioning of wings and engines for supersonic airplanes.

2 Answer any two of the following : **2×10=20**

- (a) How many types of landing gears are there?
Describe a landing gear system of an aircraft.
- (b) Describe the following :
 - (i) Dehedral
 - (ii) Monocoque construction
 - (iii) Braced cantilevers
 - (iv) Tubular fuselage construction
 - (v) Taper twist ratio.
- (c) What is Total drag ? Describe the following drags :
 - (i) parasite drag
 - (ii) induced drag
 - (iii) wave drag
 - (iv) skin friction drag
 - (v) interference drag.

3 Answer any two of the following : **2×10=20**

- (a) Briefly describe the weight and balance of an aircraft with the help of graph.
- (b) Describe the method of calculation of cg.
- (c) Describe the following :
 - (i) weight breakdown
 - (ii) total take off weight
 - (iii) payload
 - (iv) location of tailwing
 - (v) material used in aircraft construction.

- 4 Answer any two of the following : $2 \times 10 = 20$
- (a) Briefly describe the method of selection of tail and wing surfaces.
 - (b) What are the various aerodynamic considerations while designing an aircraft?
 - (c) What is stability of aircraft ? Describe the longitudinal stability and control criterias.
- 5 Answer any four of the following : $4 \times 5 = 20$
- (i) Flight Testing procedures
 - (ii) Structural layout of airplane
 - (iii) Project feasibility studies
 - (iv) History and development of airplanes
 - (v) Location of Tail surfaces.
-