7. **Attempt any one part of the following** **(1×10=10)**

a) Discuss buckling of beams in elastic stability condition.

b) Discuss local bucking stress of thin walled sections.

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

Paper ID : 2014088 **Roll No.**

B.TECH

Regualr Theory Examination (Odd Sem-VII) 2016-17
AIRCRAFT STRUCTURES

Time : 3 Hours *Max. Marks : 100*

Note: **Attempt all sections. If require any missing data; then choose suitably.**

SECTION - A

1. Attempt all questions in brief. **(10×2=20)**

a) What do you understand by the term STRUT

b) What do you understand by BEAM COLUMN

c) What do you understand by Aerodynamic loads

d) What do you understand by Brittle lacquer

e) What is a HOOP STRESS

f) What is a sandwitch structures

g) What is a Hook's law of elasticity?

h)   Define the term LIMIT - LOAD

i)   Define the term ULTIMATE - LOAD

j)   Explain the term STRENGTH to WEIGHT RATIO

SECTION - B

2.   **Attempt any three of the following   (3×10=30)**

a)   State the factors you will look for selecting

b)   Show the nature of the shear force and bending.

c)   What do you understand by Shear centre and Centre of Twist.

d)   Show the shear flow in a thin walled circular tube subjected to clockwise twist.

e)   State how stiffeners effect the buckling of plates.

SECTION - C

3.   **Attempt any one part of the following   (1×10=10)**

a)   Explain velocity - load factor (V-n) diagram and discuss its necessity and uses.

b)   Briefly explain Gust load factor using corresponding equations and sketches involved.

4.   **Attempt any one part of the following   (1×10=10)**

a)   Differentiate between bending of open section thin

walled BEAMS and closed section thin walled BEAMS

b)   List out any four theories of failure and explain any one of them.

5.   **Attempt any one part of the following   (1×10=10)**

a)   Explain the properties of shear resistant web-beams used in aircraft

b)   Discuss the bending of thin plates under pure bending.

6.   **Attempt any one part of the following   (1×10=10)**

a)   A thin walled stiffened beam i.e with one longitudinal stiffener at each end and separated by a web is subjected to a transverse force passing through the centroid of the two stiffeners Find the shear flow (q) and the shear stress (s) in the web.

   Given

   Thickness of the web (t) = 0.02m,

   Distance between the stiffeners (h) = 0.25 m, and Transverse Force per unit length of the beam (V) = 3 N.

b)   State Btedt-Batho theory and its importance for shear flow in closed sections.