R09

Code No: 58097

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2017
AEROELASTICITY
(Aeronautical Engineering)

Time: 3 Hours **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) Discuss the aero elastic effects on an aircraft. Give an example to support your answer.
b) Justify the influence of aeroelastic phenomena on design of an aircraft. [8+7]

2. Elaborate the strip theory. Also suggest which airfoil can be used to apply strip theory.[15]

3. Using holonomic and non- holonomic constraints, derive Lagrange's equation of conservative systems. [15]

4. Derive an expression for Wing torsional divergence speed considering a two-dimensional case. [15]

5. Write in detail about stiffness criteria. Justify how Kussner's formula can be used in determining torsional and flexural stiffness criterion. [15]

6. Calculate deflection (h) and rotation (α) about elastic axis using flutter of a cantilever wing analysis. [15]

7. Describe the methods used for control or prevention of flutter. Support your answer with an example for each method and each phenomenon. [15]

8. Explain the phenomenon of flow induced vibrations. Compare galloping and flow induced vibrations. [15]

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