Seventh Semester B.E. Degree Examination, June/July 2019

Wind Tunnel Techniques

Time: 3 hrs.  Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1
1 a. Outline the Buckingham’s theorem application.
   b. Identify the importance of the dimensionless number in solving Industrial Aerodynamic problems.
   (08 Marks)

OR
2 Describe Model laws, Similarity laws and Obtain expressions for the following:
   a. Reynold’s model law.
   b. Froude model law.
   c. Euler model law.
   d. Weber model law.
   (16 Marks)

Module-2
3 Show the calculation of percentage energy loss in the various parts of low speed wind tunnels.
   (16 Marks)

OR
4 With a neat sketch, explain the advantages and disadvantages for Blow down – type wind tunnel and Induction type wind tunnel.
   (16 Marks)

Module-3
5 Describe the various methods to calibrate the low speed subsonic wind tunnel.
   (16 Marks)

OR
6 Describe the various methods to calibrate the supersonic wind tunnels.
   (16 Marks)

Module-4
7 With a neat sketch, explain the following:
   b. Shrut – type balance.
   c. Plat form – type balance.
   d. Yoke – type balance.
   (16 Marks)

OR
8 With a neat sketch, explain Wood Smoke generator and Kerosene smoke generator.
   (16 Marks)

Module-5
9 a. Describe the guidelines for wind tunnel experiments using flow chart.
   b. Explain the General considerations for wind tunnel model design and construction.
   (08 Marks)

OR
10 Derive Correction coefficient for dynamic pressure in compressible flow.
   (16 Marks)

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