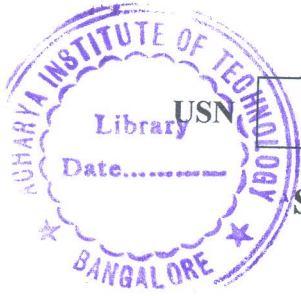


# CBCS SCHEME



17AE/AS752

## Seventh Semester B.E. Degree Examination, July/August 2021 Wind Tunnel Techniques

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions.*

- 1 a. Write Buckingham's theorem and explain it briefly. (12 Marks)  
b. Define the following Non Dimensional numbers: (08 Marks)
  - i) Force Coefficient
  - ii) Euler's number
  - iii) Reynold's number
  - iv) Moment coefficient.
- 2 a. Briefly discuss the score effects of similarities. (10 Marks)  
b. Explain the following: (10 Marks)
  - i) Kinematic similarities
  - ii) Dynamic similarities.
- 3 a. With neat sketch, explain the working principles of open and closed subsonic wind tunnels. (12 Marks)  
b. Draw a schematic diagram and explain blow down supersonic tunnels. (08 Marks)
- 4 a. Explain about the special problems of testing in supersonic wind tunnels. (10 Marks)  
b. Sketch the typical layouts of Hypersonic Wind Tunnel and explain. (10 Marks)
- 5 a. Discuss about the calibration of Wind Tunnel subsonic briefly. (12 Marks)  
b. Discuss the aspects with respect to Horizontal Buoyancy. (08 Marks)
- 6 a. Discuss about the calibration of supersonic Wind Tunnel briefly. (12 Marks)  
b. Explain about the Turbulence measurements in subsonic Tunnel. (08 Marks)
- 7 With neat sketch, explain the construction and working of six components Wind Tunnel Balance. (20 Marks)
- 8 a. Draw neat sketch and explain velocity measurements in Wind Tunnel. (12 Marks)  
b. Explain about the Oil Flow visualization techniques. (08 Marks)
- 9 a. Write short notes on the following: (12 Marks)
  - i) In take Tests
  - ii) Store Separation Testing.  
b. Draw a neat sketch and explain Flush-Mounted pressure transducers. (08 Marks)
- 10 a. Explain with sketch about the pressure measurements in Wind Tunnel. (12 Marks)  
b. Draw a neat sketch and explain Convergent-Divergent nozzle. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.