

JAYA GROUP OF INSTITUTIONS-THIRUNINRAVUR
6th SEM – B.E. / B.Tech
INTERNAL ASSESSMENT-1(MODEL EXAM-1)

Sub. Name: Wind Tunnel Techniques
Sub. Code: AE 2353
Duration: 180 minutes

Date: 02-02-2015
Branch: Aeronautical
Max.Marks: 100

PART-A (10 x 2 =20)

1. What is a shock tube? What factors that affect the effectiveness of a shock tube?
2. Name the parts of Blow down and In-draft tunnel.
3. Draw the layout of In-draft tunnel.
4. Compare relative merits and demerits of Blow down and In-draft tunnel.
5. What is the working principle of In-draft tunnel?
6. Name some smoke generation chemicals and some dyes used for visualization.
7. Distinguish between shadow graph and schlieren system.
8. What is the working principle of Interferometer?
9. Name the different methods of flow visualization.
10. Explain the limitations of dye injection method used in flow visualization.

PART-B (5 x 16 = 80)

11.a) With a neat sketch explain working principle and parts of a Blow down tunnel . Bring out the merits of Blow down over Indraft tunnel(13+3)

(OR)

b) Explain the working principle and parts of continuous return supersonic tunnel with a sketch (16)

12.a) Explain the calibration of supersonic tunnel with proper illustrations and explain the need for calibration.(14+2)

(OR)

b) Explain any two optical methods of flow visualization used for supersonic flows with a neat sketch. (16)

13.a) Explain the working principle of schlieren and shadowgraph system of flow visualization with a neat sketch.(8+8)

(OR)

b) Explain the calibration of Hypersonic tunnel with proper illustration and explain the determination of Blockage and flow angularity in Hypersonic wind tunnels (16)

14.a) Explain the smoke and tuft flow visualization methods used in wind tunnels.(16)

(OR)

b) Explain the layout of indraft tunnel with appropriate explanations and the working of the tunnel (16)

15.a) Write short notes on following:

i) Shock tubes (8)

ii) Shock tunnels.(8)

(OR)

b) Write short notes on following:

i) Interferometer (8)

ii) Gun tunnels (8)