

SATHYABAMA UNIVERSITY

(Established under section 3 of UGC Act, 1956)

Course & Branch: B.E .- Aeronautical

Title of the paper: Industrial Aerodynamics

Semester: VII

Sub.Code: 426E08

Date: 17-03-2008

Max. Marks: 80

Time: 3 Hours

Session: FN

PART – A

(10 x 2 = 20)

Answer All the Questions

1. Name the different types of terrains as per IS code 875 part 3 wind loads.
2. Draw the velocity profiles for the site in the Different terrains configurations for example hills.
3. Define gust factor.
4. Define Magnus effect.
5. Define the internal pressure coefficient for buildings.
6. Define shape factor.
7. What is aerodynamics damping?
8. Name a few different types of wind rotors.
9. Does the opening of passenger seat windows in a car increase or decrease the drag? Why?
10. Write the special features of industrial gas turbines.

PART – B
Answer All the Questions

(5 x 12 = 60)

11. Write short notes:
 - (i) Effect of terrain
 - (ii) The atmospheric boundary layer.

(or)
12. Discuss the concept of stability of atmosphere and derive the necessary relationship for different types of stability.
13. Explain how wind energy can be utilized to pump water.

(or)
14. Differentiate between a vertical axis windmill and a conventional windmill.
15. Discuss the design features of a high – speed racing car for the purpose of (i) reducing lift (ii) reducing drag.

(or)
16. Derive the $B_e t_3$ - coefficient from actuator disc theory and state the assumptions.
17. Explain design of medium and low height buildings.

(or)
18. How are wind forces on buildings estimated? What are the problems of tall buildings?
19. Explain induced vortex due to different kind of vibrations.

(or)
20. Explain the effects of Reynolds number on wake formation of bluff shapes.

