B.TECH.DEGREE EXAMINATION
Eighth Semester
Branch: Aeronautical Engineering
Industrial Aerodynamics (AN 010 804 L04)

Time: 3 hours maximum: 100 marks

Part A
Answer all questions
Each question carries three marks

1. What are the different types of winds?
2. Define the term power coefficient.
3. Discuss the importance of aerodynamics in the automobiles.
4. Explain the effects of aerodynamics on the buildings.
5. Define the term flutter.

(3x5 = 15 Marks)

Part B
Answer all questions
Each question carries five marks

6. Briefly explain the atmospheric boundary layer structure with a neat sketch.
7. What is meant by wind energy collector and mention its types.
8. What are the effects of cut back angle in vehicle aerodynamics?
9. What are the steps involved in designing a building to avoid the damages from the environmental winds.
10. Explain briefly vortex – induced vibration.

(5x5 = 25 Marks)
Part C
Answer all questions
Each question carries 12 marks

11. Explain in detail about the atmospheric boundary layer characteristics.

OR

12. What are the effects of terrain on wind characteristics?

13. Derive an expression for Betz coefficient by momentum theory.

OR

14. Explain in detail about horizontal and vertical axis machines and its types.

15. Discuss about the power requirements and drag coefficients in Automobiles

OR

16. Compare the aerodynamics of train and hovercraft.

17. Discuss the pressure distribution of low rise buildings.

OR

18. What are the significance of ventilation in the design of buildings and discuss the special problems of tall buildings.

19. What are the effects of Reynold’s number on wake formation of bluff shapes?

20. Explain the following terms
   (a) Galloping.
   (b) Stall flutter.

(12x5 = 60Marks)