

**III B.Tech I Semester Supplementary Examinations, November 2005**  
**FUNDAMENTALS OF AERONAUTICAL ENGINEERING**  
**(Aeronautical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. Describe the various parts of the standard atmosphere, What is Lapse rate and how does it affect the temperature and pressure in the atmosphere. [16]
2. On a certain day the pressure at sea level is  $101500 \text{ N/m}^2$  and the temperature is  $25^\circ\text{C}$ . The temperature is found to fall linearly with the height to  $-50^\circ\text{C}$  at 11 Km above this, it remains constant. Calculate the pressure, density and coefficient of viscosity at 15000m and 12000m. [16]
3. Describe the functioning of manual, powered and power assisted controls of an aircraft. [16]
4. (a) What is a hovercraft, describe its functioning.  
(b) What is STOL/VTOL . [16]
5. What type of construction is used for helicopter rotor blades. [16]
6. Describe the construction of turbo jet and turbo prop engine. Compare the performance characteristics of the both. [16]
7. Write short note on the following:
  - (a) Turbo fan engine [6]
  - (b) Early air planes [5]
  - (c) Gyroscope & navigation. [5]
8. Draw a line diagram of the electrical system for a typical aircraft and explain its working. [16]

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