Code No: 07A62103 **R07** **Set No. 1**

III B.Tech II Semester Regular/Supplementary Examinations,May 2010
Aerospace Propulsion - II
Common to Aeronautical Engineering, Metallurgy And Material Technology
Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Derive a relationship for the overall efficiency of an ideal ramjet engine.
   (b) How actual ramjet engine cycle deviates from an ideal ramjet engine cycle? [8+8]

2. Explain the various components of a typical large liquid propellant rocket used for a space mission, with help of a diagram. [16]

3. (a) What is the effect of pitch on the blade root fixing?
   (b) Write a note on forced convection air cooling of axial flow turbines. [8+8]

4. Write detailed notes on the various losses incurred by the chosen cooling process and their effect on the turbine cycle efficiency. [16]

5. Discuss the thrust augmentation by water-alchoal injection method. Draw T-S diagram. [16]

6. Explain briefly the meanings of following terms
   (a) Booster rocket stage.
   (b) Retro rockets.
   (c) Sustainer stage.
   (d) Earth satellite. [4+4+4+4]

7. write short notes on :
   (a) Photon propulsion
   (b) Free radical propulsion
   (c) Nuclear fusion
   (d) Problems associated with plasma jet propulsion. [4+4+4+4]

8. Write notes on the following with respect to the solid propellant rocket motor:
   (a) Rocket motor case
   (b) Igniters. [8+8]

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