

End Semester Examinations - 2015-16 Even Semester - May 2016

14AE2017 Aircraft Propulsion

Set A

Time : 3 hrs
Total Marks: 100

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1. A. What are the different requirements of the aviation fuel?
B. What are the different types of additives used and why?
- OR**
2. With a neat sketch explain
1. Ramjet engine.
2. Turbo Prop engine also state the advantages and disadvantages of each
3. Compute the indicated mean effective pressure and efficiency of a Joule cycle if the temperature at the end of combustion is 2000 K and the temperature and pressure before compression is 350 K and 1 bar. The pressure is 1.3. Assume $C_p = 1.005 \text{ kJ/kg K}$
- OR**
4. A gas turbine on a pressure ratio of 6. The inlet air temperature to the compressor is 300 K and the air entering the turbine is at a temperature of 577°C . If the volume rate of air entering the compressor is $240 \text{ m}^3/\text{s}$. Calculate the net power output of the cycle in MW. Also compute its efficiency. Assume that the cycle operates under ideal conditions
5. Explain the principal of operation for axial compressors with neat sketches and derive the work done and overall stagnation pressure ratio of axial compressor
- OR**
6. Write a note on the Elementary theory for a single impulse stage turbine
7. Explain the different zones in a combustion chamber of an aircraft engine
- OR**
8. Describe the matching procedure for a turbofan engine?
9. What are the requirements of a good afterburner also explain the operation of an afterburner with a neat sketch..
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