

Code: 13A03805

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

**GAS TURBINES & JET PROPULSION**

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) Define regeneration and reheating.
  - (b) What are the basic requirements of the working fluid in a gas turbine cycle?
  - (c) Define stagnation enthalpy and compressor efficiency.
  - (d) What are the essential components in a ramjet engine?
  - (e) Define propeller efficiency and transmission efficiency.
  - (f) Classify the rockets.
  - (g) Name the different types of propellants.
  - (h) Define thrust and propulsive efficiency.
  - (i) What is flight mechanics?
  - (j) What are the different advanced propulsion systems?

**PART – B**

(Answer all five units, 5 X 10 = 50 Marks)

**UNIT – I**

- 2 Explain with neat sketch air breathing engine.

**OR**

- 3 What are the methods to improve the efficiency of a open gas turbine cycle? Explain any one.

**UNIT – II**

- 4 Prove that the efficiency of gas turbine cycle depends on the pressure ratio.

**OR**

- 5 Explain with neat sketch, thermodynamic cycle of turbo prop engine.

**UNIT – III**

- 6 Derive an expression of thrust for ramjet engine.

**OR**

- 7 Explain thrust augmentation in a turbojet engine.

**UNIT – IV**

- 8 Explain the working principle of rocket propulsion.

**OR**

- 9 Compare air breathing engines and rocket engines.

**UNIT – V**

- 10 Explain with neat sketch, nuclear propulsion in rocket.

**OR**

- 11 Explain with neat sketch feed system, injector and nozzle expansion rocket technology.

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