

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)

- 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.
