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Sixth Semester B.E. Degree Examination, June/July 2019 Gas Turbine Technology

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. With neat sketch explain energy distribution of turboprop engine. (08 marks)
b. Explain with neat sketch thrust, pressure and velocity diagram. (08 marks)

OR

- 2 a. What are the different types of burners explain with figures and mention this advantages and disadvantages. (08 Marks)
b. Explain :
i) Thrust reversal : design, type and system
ii) Methods of thrust augmentation. (08 Marks)

Module-2

- 3 a. Explain the criteria for selection of materials and heat ranges of metals. (08 marks)
b. Write short notes on use of ceramics and composites and super alloys for turbine? (08 Marks)

OR

- 4 a. What is FADEC? Explain FADEC interface with engine. (06 Marks)
b. Explain a typical oil system and their components. (10 Marks)

Module-3

- 5 a. Explain with figure Thrust engine start envelope. (08 marks)
b. What is surge margin explain design and off design performance of engine. (08 marks)

OR

- 6 The observed measurements of a running engine is a case study are rpm = 9465, EGT = 510°C, $w_f = 1814.4$ kg/h $w_a = 90.7$ kg/s, $f_n = 4536$ kg, TSFC = 0.400. Barometer reading = 102.6KPa, Ambient temp = 27°C. Correct the engines performance to the standard day conditions of 101.3 KPa and 15°C? 1 (16 Marks)

Module-4

- 7 a. Explain what do you mean by compresses MAP for testing and performance evaluation. (08 Marks)
b. Explain turbine MAP for testing and performance evaluate. (08 Marks)

OR

- 8 a. What are the different types of inlets explain with diagram. (06 marks)
b. Write a short note on : i) ram pressure recovery of inlets ii) afterburners. (10 Marks)

Module-5

- 9 Explain preliminary flight rating test, qualification test acceptance test, and reliability test. (16 Marks)

OR

- 10 Write short notes on :

- a. Open air test bed
- b. Ground testing of engine installed in aircrafts
- c. Jet thrust measurement in flight
- d. CUSUM plat.

(16 Marks)
