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10AE74

Seventh Semester B.E. Degree Examination, Dec.2018/Jan.2019
Gas Turbine Technology

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART – A

- 1 a. With neat sketch, explain the working of turboprop engine and also mention the characteristics of turboprop engine. (12 Marks)
 b. Describe energy distribution of turbofan engine and write its characteristics. (08 Marks)
- 2 a. List and explain the effect of operating variables on burner performance. (12 Marks)
 b. What are the performance requirements of combustion chamber? (08 Marks)
- 3 a. Explain briefly the different criteria for the selection of materials in gas turbine engine. (10 Marks)
 b. List and explain the methods of casting. (10 Marks)
- 4 a. Explain the interface of FADEC on an Aircraft Jet engine. (10 Marks)
 b. List the various gas turbine starters and explain it. (10 Marks)

PART – B

- 5 The observed measurements of a running engine in a case study are :
 $\text{rpm} = 9465$, $E_{GT} = 510^{\circ}\text{C}$, $w_f = 1814.4 \text{ kg/h}$, $w_a = 90.7 \text{ kg/s}$, $F_n = 4536 \text{ kg}$,
 $T_{sFC} = 0.400$, Barometer reading = 102.6 KPa , Ambient temperature = 27°C , Correct the engine performance to the standard day condition of 101.3KPa and 15°C . (20 Marks)
- 6 a. Draw and explain the combustor rig test. (10 Marks)
 b. What do you mean by compressor MAP? What results can obtained from it? (10 Marks)
- 7 a. Explain the following engine testing :
 i) Altitude test facility (ATF) ii) Flying test bed. (10 Marks)
 b. What are the basic engine rates for turbojet and turbofan? Explain briefly. (10 Marks)
- 8 a. What do you mean by test cell? What are the factors considered for design of test engine test beds? Explain. (10 Marks)
 b. Explain a typical data acquisition system. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.