

# CRASH COURSE

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10AE74

Seventh Semester B.E. Degree Examination, May 2017

## 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. Explain the difference between turbojet and turbofan engines. Draw the energy distribution of these engines, with the help of neat sketches. (10 Marks)  
b. Draw the pressure, temperature and velocity changes across a turbo prop engine. (10 Marks)
- 2 a. List three types of burner systems. Give the advantages and disadvantages of each type. (10 Marks)  
b. Explain different methods of thrust augmentation. (10 Marks)
- 3 a. Explain briefly the different criteria for the selection of materials in gas turbine engine. (10 Marks)  
b. List any five methods of casting and give brief description of each method. (10 Marks)
- 4 a. With a neat sketch, explain working of a general FADEC system along with its interface. (10 Marks)  
b. Explain the starting mechanism of an aircraft engine. (10 Marks)

### PART – B

- 5 The observed measurements of a running engine in a case study are : rpm = 9465, EGT = 510<sup>0</sup>C  
 $W_f = 1814.4\text{kg/h}$  ,  $W_a = 90.7\text{ kg/s}$  ,  $F_n = 4536\text{kg}$  , TSFC = 0.400 , Barometer reading = 102.6 kPa , Ambient temperature = 27<sup>0</sup>C. Correct the engines performance to the standard day condition of 101.3kPa and 15<sup>0</sup>C. (20 Marks)
- 6 a. Explain the performance characteristics of a combustor. (10 Marks)  
b. Draw and explain the compressor map of axial flow compressor. (10 Marks)
- 7 a. Explain the following engine testing :  
i) Altitude test facility (ATF) ii) Flying test bed. (10 Marks)  
b. What are the various preliminary flight rating tests? Explain. (10 Marks)
- 8 a. Explain a typical data acquisition system. (10 Marks)  
b. Briefly discuss the MASS and CUSUM plots. (10 Marks)

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Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing or identification appear to evaluator will be equated with an equivalent zero mark. (10 Marks)