



CBCS SCHEME

15AE62

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Sixth Semester B.E. Degree Examination, July/August 2021

Gas Turbine Technology

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. With a neat graph, explain variation of thrust against velocity of aircraft. (08 Marks)
b. What are the various types of burners? Why after burners are used? Explain. (08 Marks)
- 2 a. Explain the difference between turbojet and turbofan engines. Draw the energy distribution of turbojet engine, with the help of neat sketch. (08 Marks)
b. Draw the pressure, temperature and velocity changes across a turboprop engine. (08 Marks)
- 3 a. With a neat sketch, explain working of a general FADEC system along with its interface. (08 Marks)
b. Explain the starting mechanism of an Aircrafts engine. (08 Marks)
- 4 a. What are the characteristics that must be considered in the selection of any metal for use in the gas turbine engines? Explain. (08 Marks)
b. Explain any 4 surface finishing processes. (08 Marks)
- 5 a. What are the parameters monitored for engine performance monitoring? (08 Marks)
b. Mention the steps involved in starting of gas turbine engine. (08 Marks)
- 6 a. What is meant by Transient Performance? (08 Marks)
b. What is Wind Milling of Engine? Explain briefly Turbojet Wind Milling Process. (08 Marks)
- 7 The observed measurement of a running engine in a case study are : rpm = 9465 , EGT = 510⁰C
 $W_f = 1814.4 \text{ kg/h}$, $W_a = 90.7 \text{ kg/s}$, $F_n = 4536 \text{ kg}$, TSFC = 0.4 , Barometer reading = 102.6KPa , Ambient temperature = 27⁰C. Correct the engine performance to the standard day conditions of 101.3 KPa and 15⁰C. (16 Marks)
- 8 a. Draw and explain the compressor map of axial flow compressor. (08 Marks)
b. Write a short note on :
i) Surge margin requirements ii) Surge margin stack up. (08 Marks)
- 9 a. Explain the following engine testing's :
i) Altitude Test Facility (ATF) ii) Flying test bed. (08 Marks)
b. What are the various Preliminary Flight Rating Tests? Explain. (08 Marks)
- 10 a. Explain a typical Data Acquisition Systems. (08 Marks)
b. Briefly discuss the MASS and CUSUM plots. (08 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.