

ONE TIME EXIT SCHEME

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10AE74

Seventh Semester B.E. Degree Examination, April 2018

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 with a neat sketch, pressure, temperature and velocity changes in various components of turbo jet engine with after burner. (10 Marks)
b. Show that turbo fan is more efficient than turbo jet engine. (05 Marks)
c. Draw energy distribution diagram for turboprop engine (05 Marks)
- 2 a. Explain in detail the effect of operating variables on burner performance. (12 Marks)
b. Write the requirements of good thrust reverser. (04 Marks)
c. Explain working principle of after burner. (04 Marks)
- 3 a. Explain in detail any five surface finishing processes. (10 Marks)
b. Explain any five methods of casting. (10 Marks)
- 4 a. With a neat sketch, draw a typical fuel system and write function of its components. (10 Marks)
b. Explain about air turbine starter, with a neat sketch. (06 Marks)
c. Write advantages and disadvantages of Gas turbine starter. (04 Marks)

PART – B

- 5 a. Explain about Manned Aero thrust engine restart envelopes with neat sketch. (10 Marks)
b. Write the fundamental start phases of a engine. (05 Marks)
c. Define design, off design and transient performance. (05 Marks)
- 6 a. Explain about Rotating and Locked stall, with neat sketch. (10 Marks)
b. Explain about Axial flow turbine map. (10 Marks)
- 7 a. The following conditions are known about a running engine, RPM = 9465 , EGT = 510⁰C ,
 $W_f = 1814.4 \text{ kg/hr}$, $W_a = 90.7 \text{ kg/s}$, $F_n = 4536 \text{ kg}$, Barometric pressure = 102.6 KPa ,
Ambient temperature = 27.8⁰C. Calculate corrected above engine performance parameter to
the standard conditions of 101.3KPa and 15⁰C. (10 Marks)
b. Explain about various preliminary flight ratings. (10 Marks)
- 8 a. Explain the measurement of thrust and shaft speed. (10 Marks)
b. Write the steps involved in test bed calibration. (06 Marks)
c. Write the purpose of pressure measurement. (04 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification number or any other information on the remaining blank pages will be treated as malpractice.