



CBCS SCHEME

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18AE644

Sixth Semester B.E. Degree Examination, Dec.2024/Jan.2025

Gas Turbine Technology

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Illustrate and describe the comparison of operating parameters of turbojets, turboprop and turbofan engines. (10 Marks)
- b. With the help of energy distribution diagram, explain the performance characteristics of a turboprop engine. List the advantages and disadvantages. (10 Marks)

OR

- 2 a. Discuss about the types of burner system used in aircraft engines. List its advantages and disadvantages. (10 Marks)
- b. Explain about the following with neat sketch :
 - i) Thrust reversers
 - ii) Thrust augmentation and its methods. (10 Marks)

Module-2

- 3 a. Write and discuss about the characteristics to be considered for selection of metals in gas turbine engines. (10 Marks)
- b. What is surface finishing process and explain the methods of surface finishing process. (10 Marks)

OR

- 4 a. Explain the working of general of FADEC system with neat sketch. (10 Marks)
- b. Explain the starting mechanism of an aircraft engine. (10 Marks)

Module-3

- 5 a. Define wind milling and explain the process of wind milling of a turbojets engine. (10 Marks)
- b. Explain about :
 - i) Thrust engine start envelope
 - ii) Engine performance parameter with related equations. (10 Marks)

OR

- 6 a. Write about importance of engine performance monitoring and explain its parameters. (10 Marks)
- b. Discuss about steps involved in starting of gas turbine engine and explain in brief. (10 Marks)

Module-4

- 7 a. Draw and explain the compressor MAP of axial flow compressor. (10 Marks)
b. Discuss the three-off design performance characteristics of compression used in gas turbine engine. (10 Marks)

OR

- 8 The observed measurements of a running engine in 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 = 102.6 KPa, Ambient temperature = 27°C, correct the engine performance to the standard day conditions of 101.3 KPa and 15°C. (20 Marks)

Module-5

- 9 a. List the proof of concepts used in the process of engine testing. Explain preliminary flight rating test in detail. (10 Marks)
b. Explain the typical data acquisition system. (10 Marks)

OR

- 10 a. Explain about MASS and CUSUM plots. (10 Marks)
b. Discuss the various preliminary flight rating tests and explain. (10 Marks)

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