

CBCS SCHEME

15AE62



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Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020

Gas Turbine Technology

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the working principle of turbojet engine with the help of neat sketch. (08 Marks)
 b. Compare specific thrust and specific fuel consumption and discuss the relation between them. (08 Marks)

OR

- 2 a. With a neat sketch explain the different types of gas turbine burners. (08 Marks)
 b. Explain different methods of thrust augmentation. (08 Marks)

Module-2

- 3 a. What are the characteristics that must be considered in the selection of materials used in gas turbine engines? (08 Marks)
 b. Explain the following :
 i) Powder metallurgy process
 ii) Super alloys for turbines. (08 Marks)

OR

- 4 a. Name the different fuel system used in Gas turbine engine. Explain any one type of fuel system with neat sketch. (08 Marks)
 b. Explain various gas turbine starters and starting systems. (08 Marks)

Module-3

- 5 a. What do you mean by design, off-design performance? What are the different parameters involved in design performance. (08 Marks)
 b. Explain transient performance of a engine. (08 Marks)

OR

- 6 a. What is wind milling? Explain the turbojet wind milling process. (08 Marks)
 b. How a performance of a single spool turbojet engine is evaluated? (08 Marks)

Module-4

- 7 a. What is compressor Map? What results can be obtained from it? (08 Marks)
 b. With a net sketch explain surging and surge margin stack up. (08 Marks)

OR

- 8 a. Draw a typical turbine MAP? Explain. (08 Marks)
 b. A 13 stage compressor has pressure ratio across each stage is 1.2 and an ambient inlet temperature pressure of 14.7 PSI. Determine the final pressure, compression ratio, pressure rise in first sage and final stage. (08 Marks)

Module-5

- 9 a. Ex the following engine testings :
i) Preliminary flight rating test (08 Marks)
ii) Durability and life assessment tests. (08 Marks)
- b. Explain engine testing with simulated inlet distortions. (08 Marks)
- OR**
- 10 a. Why do we need test bed calibration? Explain attitude test facility and flying test bed. (08 Marks)
- b. Explain the different technique of pressure measurement in an engine. (08 Marks)

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