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15AE62

Sixth Semester B.E. Degree Examination, July/August 2022

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. Define the term Airbreathing Engine. And also explain the turbofan engine with neat diagram. (08 Marks)
b. With the neat sketch, explain the axial flow compressor. (08 Marks)

OR

- 2 a. Explain the following:
i) Methods of thrust Augmentation
ii) Thrust reversers. (10 Marks)
b. Write a short note on sound suppressions. (06 Marks)

Module-2

- 3 a. With a neat flow chart explain the powdered metallurgy. (08 Marks)
b. Define the term casting and explain sand casting with suitable figure. (08 Marks)

OR

- 4 a. Explain the application of ceramics and composite material in Aero Industry. (08 Marks)
b. List the different types of super alloys and explain why super alloys are used in Turbine section. (08 Marks)

Module-3

- 5 a. Explain transient working lines for acceleration and deceleration with relevant sketches. (08 Marks)
b. Explain the turbojet wind milling process with suitable diagram. (08 Marks)

OR

- 6 a. Explain turbofan wind milling process with relevant diagram. (08 Marks)
b. Explain the following:
i) Engine performance monitoring
ii) Surge margin requirements. (08 Marks)

Module-4

- 7 a. Explain the following:
i) Surging and choking of compressor
ii) Losses in centrifugal compressor. (08 Marks)
b. A centrifugal compressor under test gave the following data:
Speed = 11,500rev/min.
Inlet total head temperature = 21°C
Outlet and Inlet total head pressure = 4 bar, 1 bar
Impeller diameter = 75cm
If the slip factor is 0.92, what is the compressor efficiency? (08 Marks)

OR

- 8 a. With the neat sketch, explain the velocity triangle of axial compressor. (08 Marks)
b. Explain the following:
i) Compressor efficiency
ii) Compressor characteristics. (08 Marks)

Module-5

- 9 a. Explain open air test bed with relevant diagram. (08 Marks)
b. Explain ATF with suitable diagram. (08 Marks)

OR

- 10 a. Explain with suitable diagram "Enclosed thrust test bed". (08 Marks)
b. Explain Indoor sea level shaft bed with relevant diagram. (08 Marks)
