CBCS SCHEME

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18AE644

Sixth Semester B.E. Degree Examination, June/July 2023
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. Explain the difference between turbojet and turbofan engines. Draw the energy distribution of turbojet engine with the help of neat sketch. **(10 Marks)**

b. Draw the pressure, temperature and velocity changes across a turboprop engine. **(10 Marks)**

OR

2 a. What are the various types of burners? Why after burners are used? Explain. **(10 Marks)**

b. With a neat graph, explain variation of thrust against velocity of aircraft. **(10 Marks)**

Module-2

3 a. What are the characteristics that must be considered in the selection of any metal for use in the gas turbine engines? Explain. **(10 Marks)**

b. Explain any 5 surface finishing processes. **(10 Marks)**

OR

4 a. Explain the starting mechanism of an aircraft engine. **(10 Marks)**

b. With a neat sketch explain working of a general FADEC system along with its interface. **(10 Marks)**

Module-3

5 a. What is wind milling of engines? Explain briefly turbojet wind milling process. **(10 Marks)**

b. What is transient performance? Explain. **(10 Marks)**

OR

6 a. Mention the steps involved in starting of gas turbine engine. **(10 Marks)**

b. What are the parameters monitored for engine performance. **(10 Marks)**

Module-4

7 a. Write a short note on :
i) Surge margin requirements
ii) Surge margin stack up **(10 Marks)**

b. With a schematic diagram, explain the compressor map of axial flow compressor. **(10 Marks)**

OR

8 The observed measurements of a running engine in a case study are :
rpm = 9465, EGT = 510°C, w_f = 1814.4Kg/h, w_a = 90.7Kg/s, F_n = 4536Kg, TSFC = 0.4, Barometer reading = 102.6KPa, Ambient temperature = 27°C, Correct the engine performance to the standard day condition of 101.3KPa and 15°C. **(20 Marks)**

Module-5

9 a. Briefly discuss the MASS and CUSUM plots. **(10 Marks)**
b. Explain a typical data acquisition system. **(10 Marks)**

OR

10 a. What are the various preliminary flight rating tests? Explain. **(10 Marks)**
b. Explain the following engine testings
i) Altitude Test Facility (ATF)
ii) Flying Test Bed **(10 Marks)**

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