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10AE74

Seventh Semester B.E. Degree Examination, Aug./Sept.2020
Gas Turbine Technology

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO full questions from each part.***

PART – A

1 a. With a neat sketch, explain the working of a turbo fan engine and also mention the characteristics of a turbo fan engine. **(12 Marks)**

b. What are the various parameters that affect the thrust of a turbojet engine? Explain them with suitable graphs. **(08 Marks)**

2 a. Explain the variation of pressure and velocity in an impulse and reaction turbine with appropriate sketches. **(10 Marks)**

b. What are the various components of a jet engine after burner and explain the basic working of an after burner? **(10 Marks)**

3 a. Briefly explain the heat ranges of any 3 following alloys :
i) Aluminum ii) Titanium iii) Nickel iv) Steel v) Cobalt. **(06 Marks)**

b. Describe the concept of high temperature strength requirement for materials selected for a gas turbine engine. **(06 Marks)**

c. What are the various techniques available for the manufacturing of gas turbine engine components? Explain the methods of casting used to manufacture engine parts. **(08 Marks)**

4 a. Name different types of fuel controls and explain. **(10 Marks)**

b. Explain briefly about fuel system components. **(10 Marks)**

PART – B

5 a. What do you mean by design and off design and transient performance? What are the different parameters in design point performance? **(10 Marks)**

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

6 a. Describe surge, rotating stall and locked stall of a compressor with suitable sketches. **(10 Marks)**

b. What is compressor map and what result can be obtained? **(10 Marks)**

7 a. Explain Life Assessment Tests. **(06 Marks)**

b. Describe environmental ingestion tests on engine. **(08 Marks)**

c. Describe Altitude test facility. **(06 Marks)**

8 a. Explain Engine test bed calibration. **(10 Marks)**

b. List and explain how the parameters are measured in a test bed. **(10 Marks)**

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