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Seventh Semester B.E. Degree Examination, Jan./Feb. 2021
Gas Turbine Technology

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.
2. Assume the data if necessary.
3. Draw neat figures wherever necessary.

PART – A

- 1 a. By using a suitable diagram, explain in detail for any jet engine what is reason of placing lower and higher compressor and turbine in aircraft engine? (12 Marks)
 b. What is by-pass ratio, how does it supports the jet engine, explain with neat sketch. (08 Marks)
- 2 a. Define Thrust reverser. Explain with neat sketch different types of thrust reversers. Give its advantages. (15 Marks)
 b. Write a short note on thrust augmentation. (05 Marks)
- 3 a. What are the coating given to the turbine blades? (06 Marks)
 b. What are the advantages of a shrouded turbine blade? (06 Marks)
 c. Describe the exhaust system of a jet engine. (08 Marks)
- 4 a. Explain the types of controls in fuel system, step by step. (08 Marks)
 b. Define the following: (12 Marks)
 - i) Overspeed governor.
 - ii) Bleed valves.
 - iii) Fuel-oil cooler.
 - iv) Water-injection system.

PART – B

- 5 The observed measurements of a running engine in a case study are :
 $Rpm = 9465$, $EGT = 510^{\circ}C$, $W_F = 1814.4 \text{ kg/hr}$, $W_a = 90.7 \text{ kg/s}$, $F_n = 4536 \text{ kg}$,
 $TSFC = 0.400$.
 Barometer readings = 102.6 Kpa , Ambient temp = $27^{\circ}C$. Correct the engines performance to the standard day conditions of 101.3 Kpa and $15^{\circ}C$. (20 Marks)
- 6 a. What is compressor MAP? (08 Marks)
 b. Pressure recovery at inlet. Describe. (06 Marks)
 c. What is the need for a nozzle in a turbine engine? (06 Marks)
- 7 a. Explain the engine trimming process. How it is carried out on different engines? (10 Marks)
 b. What are the various preliminary flight rating tests? Explain. (10 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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.