

B.E DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Seventh Semester

AERONAUTICAL ENGINEERING

AER133: Gas Turbine Technology

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The efficiency of a jet engine is higher at
 - a) low speeds
 - b) high speeds
 - c) low altitudes
 - d) high altitudes
2. In axial flow compressor, exit flow angle deviation from the blade angle is a function of
 - a) blade camber
 - b) blade camber and incidence angle
 - c) space-chord ratio
 - d) blade camber and space-chord ratio
3. Oil filters are used to remove
 - a) Coarse particle
 - b) Fine particle
 - c) Both (a) & (b)
 - d) None of the above
4. Sensor is used to
 - a) Measure flow of fuel
 - b) Measure air speed
 - c) Measure temperature
 - d) All the above
5. An engine is said to be running off-design
 - a) change of throttle setting
 - b) change of altitude
 - c) change of flight speed
 - d) All the above
6. Engine flameout due to
 - a) fuel starvation
 - b) compressor stall
 - c) insufficient oxygen
 - d) All the above
7. Surge is also called as
 - a) Lower
 - b) Mean
 - c) Stall
 - d) All the above

8. A combustion light up test used to find
- a) Combustor efficiency
 - b) Combustor ignition
 - c) Combustion speed
 - d) All the above
9. Calibration is a comparison between_____ values
- a) Actual and true
 - b) True and maximum
 - c) Actual and standard
 - d) Actual to minimum
10. Accuracy is
- a) Difference between mean and basic
 - b) Difference between lower and basic
 - c) Difference between maximum and basic
 - d) None of the above

PART B (10 x 2 = 20 Marks)

- 11. Name the operating parameters of jet engine.
- 12. What is meant by thrust reversal?
- 13. How surface finishes affect the performance of the engine?
- 14. Relate sensors and controls.
- 15. Define surge margin.
- 16. What is meant by wind milling of engine?
- 17. List out the pressure losses in combustion.
- 18. Name few advantages of after burner.
- 19. Define durability.
- 20. Compare accuracy and uncertainty

PART C (5 x 14 = 70 Marks)

21. a) Summarize the energy distribution of turboprop engine.
- (OR)**
- b) Illustrate the methods of thrust augmentation.
22. a) Identify the turbine engine parts improvement through powder metallurgy.
- (OR)**
- b) Explain the various gas turbine starters and compare its advantages.
23. a) Compare design and off- design engine performance parameters and its role.
- (OR)**
- b) Interpret the starting torque and speed requirement of the engine.

24. a) (i) Explain about inlet distortions. (7)
(ii) Describe the testing and performance evaluation of compressor. (7)

(OR)

- b) Discuss about the ram pressure recovery of inlet duct.

25. a) Explain about preliminary flight rating test.

(OR)

- b) (i) Explain about the steps in test bed cross calibration. (7)
(ii) Discuss the performance reduction methodology. (7)
