

23ASB201 AEROSPACE PROPULSION

Question Bank

UNIT I - INTRODUCTION TO AIRCRAFT PROPULSION

Part A – 2 Mark Questions

(Remembering, Understanding, and Applying Levels)

1. Define propulsion. *(Remembering)*
2. What are the basic laws of thermodynamics used in propulsion? *(Remembering)*
3. State the first and second laws of thermodynamics. *(Understanding)*
4. What is an isentropic process? *(Understanding)*
5. List the different types of aircraft engines. *(Remembering)*
6. What are the advantages of a turbofan engine? *(Understanding)*
7. Define a specific impulse and its significance. *(Understanding)*
8. Write the thrust equation and explain its terms. *(Applying)*
9. What are the factors affecting thrust production in aircraft engines? *(Understanding)*
10. Differentiate between turbojet and turboprop engines. *(Analyzing)*
11. What is meant by propulsive efficiency? *(Understanding)*
12. How does altitude affect the thrust of an engine? *(Understanding)*
13. What is the role of a diffuser in a jet engine? *(Understanding)*
14. Explain the importance of fuel atomization in combustion. *(Understanding)*
15. What is the significance of spray formation in propulsion? *(Understanding)*
16. Define combustion efficiency. *(Remembering)*
17. What are the major components of a gas turbine engine? *(Remembering)*
18. Explain the importance of air-fuel ratio in propulsion systems. *(Understanding)*

19. What is stagnation pressure? (*Understanding*)

20. Define the Mach number and its importance in propulsion. (*Remembering*)

Part B – 16 Mark Questions

(Applying, Analyzing, Evaluating, and Creating Levels)

1. Explain the basic thermodynamic principles involved in aircraft propulsion. (*Applying*)
2. Derive the thrust equation and explain each term in detail. (*Applying*)
3. Analyze the various factors affecting an aircraft engine's thrust and explain their impact. (*Analyzing*)
4. Compare and contrast different types of aircraft engines based on efficiency, fuel consumption, and thrust characteristics. (*Analyzing*)
5. Discuss the role of atomization and spray formation in combustion. How does it affect engine performance? (*Evaluating*)
6. Illustrate and explain the workings of a turbojet engine with a neat schematic diagram. (*Applying*)
7. Evaluate the efficiencies involved in an aircraft propulsion system (thermal, propulsive, overall efficiency). (*Evaluating*)
8. Discuss the effect of altitude and flight speed on the performance of aircraft engines. (*Evaluating*)
9. Explain the concept of specific impulse and how it helps in evaluating propulsion performance. (*Applying*)
10. Analyze the differences between subsonic and supersonic propulsion systems. (*Analyzing*)
11. Explain in detail the design and working principles of a turbofan engine and compare it with a turbojet engine. (*Analyzing*)

12. Describe the importance of fuel injection and combustion chamber design in propulsion systems. (*Applying*)
13. With a detailed schematic, explain the Brayton cycle and its application in gas turbine engines. (*Applying*)
14. Evaluate thermodynamics' role in improving modern aircraft engines' efficiency. (*Evaluating*)
15. Design a conceptual propulsion system for a high-speed aircraft and justify your choice of engine type. (*Creating*)
16. Propose improvements in aircraft propulsion efficiency by integrating new technologies. (*Creating*)