

- Q.24 What is the variation of pressure in the combustion chamber?
 - Q.25 How does reduction gear system work?
 - Q.26 What are the applications of bleed air? From where it is extracted?
 - Q.27 Derive an expression for thermal efficiency of Brayton cycle as a function of pressure ratio.
 - Q.28 What is the need of cooling the turbine blades?
 - Q.29 What are the different applications of turbo prop and turbo fan engines?
 - Q.30 Describe an exhaust system
 - Q.31 What are the different types of compressors?
 - Q.32 Write down the advantages and disadvantages of axial compressor.
 - Q.33 Describe the fuel of a gas turbine engine?
 - Q.34 Write down the basic principle of the operation of Piston Engines.
 - Q.35 Describe the function of inlet guide vanes.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Describe the air system of turbine engine. Describe a reduction gear system.

Q.37 Explain the functioning of any compressor type with TS diagram and discuss the factors affecting the compressor.

Q.38 Explain in detail the various type of materials used in Aircraft Engines and their properties.

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5th Sem./Branch : AME

Subject:- Turbo Propeller and Turbo Jet Engines-I

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 What is the primary difference between a piston engine and a turbine engine?

 - a) Piston engines use compression ignition, while turbine engines use spark ignition.
 - b) Piston engines rely on reciprocating motion, while turbine engines use rotary motion.
 - c) Piston engines have higher specific fuel consumption than turbine engines.
 - d) Piston engines are more fuel-efficient at high altitudes compared to turbine engines

Q.2 What type of fuel is commonly used in turbine engines?

 - a) Avgas
 - b) Diesel
 - c) Kerosene
 - d) Ethanol

Q.3 In a comparative study between piston engines and turbine engines, which engine type is typically more suitable for high-speed, high-altitude flight?

 - a) Piston engine
 - b) Turbine engine
 - c) Both engines perform equally well
 - d) Neither engine is suitable for high-speed, high-altitude flight

- Q.4 Which component of a jet engine is responsible for compressing incoming air?
- Turbine
 - Combustor
 - Compressor
 - Nozzle
- Q.5 Which of the following statements about jet propulsion is true?
- Jet engines operate on the principle of buoyancy
 - Jet propulsion is only suitable for aircraft
 - Jet engines generate thrust by expelling high-velocity exhaust gases
 - Jet engines rely on external propellers for propulsion
- Q.6 What is the function of the nozzle in a jet engine?
- To compress incoming air
 - To mix fuel with compressed air
 - To guide and accelerate the exhaust gases
 - To cool down the engine components
- Q.7 Which type of aviation gas turbine engine is known for its application in regional airliners and general aviation aircraft, utilizing a combination of jet propulsion and propeller propulsion?
- Turbojet engine
 - Turbofan engine
 - Turboprop engine
 - Turbo shaft engine
- Q.8 In a turbojet engine, what is the primary function of the compressor?
- To compress ambient air for combustion
 - To drive the turbine for propulsion
 - To cool the engine components
 - To mix fuel with compressed air

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- Q.9 What major component is unique to a turbofan engine compared to other gas turbine engines?
- Combustion chamber
 - Turbine
 - Fan bypass duct
 - Compressor
- Q.10 What is a major advantage of axial compressors over centrifugal compressors in turbine engines?
- Higher pressure ratio capability
 - Simpler construction
 - Lower weight
 - Better resistance to foreign object damage

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Draw ideal cycle for gas turbine engines?
- What is the principle of a jet engine?
- What is the operating range of jet engine aircrafts?
- Why is cooling needed in turbine engines?
- Is the gas power cycle open or closed?
- What are the processes in Otto cycle?
- What is cooling material an aircraft engine?
- Where Turboshaft engine is used?
- What do you mean by stalling of compressors?
- What are the disadvantages of Piston Engines?

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Draw a Brayton cycle with heat exchanger?
- What advantage jet engine carries?
- Draw a curve for the compressor characteristics and explain.

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