Q.22 What are the various gas turbine engines and their relative applications?
Q.23 Write a brief note on different types of nozzles used.
Q.24 Describe the air inlet in the combustion chamber.
Q.25 What is the use of after burner?
Q.26 Describe regenerative cooled compressors.
Q.27 What are the important factors affecting combustor design?
Q.28 Compare axial and centrifugal compressor.
Q.29 Draw a turbofan engine and explain.
Q.30 What accessory gear section? Explain.
Q.31 Do a comparative study between piston engine and turbine engine.
Q.32 Draw and explain T-S diagram for turbojet engine with reheat cycle.
Q.33 What are the three types of combustion chamber? Compare its advantages and disadvantages.
Q.34 Why Axial Compressor has several stages?
Q.35 Describe the factors which affect the performance of combustion chamber.

SECTION-D

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

Q.36 What are various types of gas turbine engines? Explain each one of them with the relative advantages and applications.
Q.37 What is the use of bleed air? Describe the process of cooling turbine blades.
Q.38 What are the different material for gas turbine engines and explain the reason for selection of each one of them.

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5th Sem. / AME

Subject:- Turbo Propeller and Turbo Jet Engines - I

Time : 3Hrs. M.M. : 100

SECTION-A

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

Q.1 What thermodynamic cycle is commonly associated with jet engines?
a) Otto cycle b) Diesel cycle
c) Brayton cycle d) Rankine cycle

Q.2 Which of the following is a characteristic of piston engines compared to turbine engines?
a) Higher power-to-weight ratio
b) Lower exhaust temperature
c) Slower acceleration
d) Greater reliability

Q.3 What is the primary principle behind jet propulsion?
a) Newton's Third Law of Motion
b) Archimedes' Principle
c) Boyle's Law
d) Pascal's Law

Q.4 What is the purpose of the combustion chamber in a jet engine?
a) To cool down the incoming air
b) To compress the air
c) To mix fuel with compressed air and ignite it
d) To accelerate the exhaust gases

Q.5 What distinguishes a turboprop engine from other gas turbine engines?

a) It is primarily used in military fighter jets
b) It incorporates a bypass duct for additional thrust
c) It drives a propeller directly for propulsion
d) It utilizes a multi-stage compressor for increased efficiency

Q.6 What is a key feature of a turbofan engine that sets it apart from a turbojet engine?

a) It lacks a compressor
b) It has a larger diameter fan in front of the compressor
c) It utilizes a combustion chamber for fuel combustion
d) It does not generate thrust through the exhaust nozzle

Q.7 Which type of air jet design is commonly used in turbofan engines to increase airflow efficiency and reduce noise?

a) Fixed geometry inlet
b) Variable geometry inlet
c) Radial inlet
d) Annular inlet

Q.8 Which type of compressor is known for its compact design and high efficiency but is more prone to surge and stall phenomena?

a) Centrifugal compressor
b) Axial compressor
c) Mixed-flow compressor
d) Rotary compressor

Q.9 Which component of a turbine engine's air system is primarily responsible for cooling hot sections of the engine?

a) Bleed valve b) Cooling fan
c) Turbine d) Heat exchanger

Q.10 In a turbine engine, what does a bleed valve do?

a) Regulates the airflow into the combustion chamber
b) Controls the temperature of the engine's air supply
c) Releases excess air from the compressor section
d) Seals off the air inlet during engine shutdown

SECTION-B

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

Q.11 What is jet engine?

Q.12 What is basic difference between piston and turbine engine?

Q.13 Name major components of gas turbine engine.

Q.14 What is the basic principle behind functioning of turbine engines?

Q.15 What are the types of compressors?

Q.16 Does bye-pass air increase the efficiency?

Q.17 Where reduction gear is used?

Q.18 How cooling of blades is done?

Q.19 What is the material of combustion chamber?

Q.20 What is the main property of turbine material?

SECTION-C

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

Q.21 Explain Brayton cycle for engines.