



Sanjay Ghodawat University, Kolhapur

2018-19

Established as State Private University under Govt. of Maharashtra. Act No XL, 2017

EXM/P/09/01

Year and Program: 2018-19

School of Technology

Department of SY B.Tech

Course Code: AET206

Course Title: Propulsion

Semester – IV

Day and Date: Saturday  
25-05-2019

End Semester Examination  
(ESE)

Time: 3 Hrs.  
10.30 am to 1.30 pm

Max Marks: 100

**Instructions:**

- 1) All questions are compulsory.
- 2) Assume suitable data wherever necessary.
- 3) Figures to the right indicate full marks.

Q.1	Attempt the Following	Marks	Bloom's Level	CO
a)	Explain in detail about the various types of Thrust Augmentation?	07	L <sub>2</sub>	CO1
	OR			
a)	Sketch and describe about working of Gas Turbine Engine?	07	L <sub>2</sub>	CO1
b)	Derive the equation for Relation between minimum area ratio and external deceleration ratio neat sketch.	08	L <sub>3</sub>	CO2
	OR			
b)	What all are the different types of Starting problem occur in supersonic inlets and shock swallowing with neat sketches?	08	L <sub>3</sub>	CO2
Q.2	Attempt the Following			
a)	Explain with neat sketch about Flame Tube Cooling?	07	L <sub>2</sub>	CO2
	OR			
a)	Discuss in detail about Factor affecting Combustion chamber Design in detail.	07	L <sub>2</sub>	CO2
b)	Sketch and Explain the Thrust Reversal in Aircraft Engine?	08	L <sub>2</sub>	CO2
	OR			
b)	Describe in detail about Convergent Nozzles and Convergent Divergent Nozzle in Engine with neat sketch.	08	L <sub>2</sub>	CO2

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<b>Q.3 Solve any Two</b>				
a)	Explain the following:	08	L <sub>2</sub>	CO1
	1) Turbofan Engine			
	2) Turboprop Engine			
b)	Describe in detail about Internal flow and Stall in subsonic inlets.	08	L <sub>2</sub>	CO2
c)	Discuss the following:	08	L <sub>2</sub>	CO2
	1) Can Combustion Chamber    2) Annular Combustion Chamber			
d)	Explain the following:	08	L <sub>2</sub>	CO2
	1) Nozzle Efficiency 2) Losses in Nozzles			
<b>Q.4 Solve any Two</b>				
a)	Explain in detail about operation of Centrifugal Compressor and with neat sketch?	09	L <sub>2</sub>	CO3
b)	Discuss in detail about theory of axial flow Compressor with neat sketch.	09	L <sub>3</sub>	CO3
c)	Describe in detail about Centrifugal flow compressor velocity diagram and procedure.	09	L <sub>2</sub>	CO3
<b>Q.5 Solve any Two</b>				
a)	Explain with neat sketch about Turbo Ramjet Engine.	09	L <sub>2</sub>	CO4
b)	With neat Sketch Discuss in detail about Turbo Rocket Engines	09	L <sub>2</sub>	CO4
c)	Classify and explain about Rocket Propulsion System	09	L <sub>3</sub>	CO4
<b>Q.6 Solve any Three</b>				
a)	In a centrifugal compressor the atmospheric air enters at 28 degree Celsius and leaves at 110 degree Celsius and 2 bar. Calculate the	06	L <sub>2</sub>	CO3

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isentropic efficiency and power required by the compressor. If 40 kg of air is compressed per minute. Take  $C_p = 1 \text{ kJ/kg K}$  &  $C_v = 0.716 \text{ kJ/kg K}$

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|--|----|-------|-----|
| b) Derive the Isentropic efficiency of Centrifugal flow compressor | 06 | $L_2$ | CO3 |
| c) Sketch and Explain in detail about Ram Jet Engine               | 06 | $L_2$ | CO4 |
| d) Explain in detail about Pulse jet Engine with neat sketch.      | 06 | $L_2$ | CO4 |

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