Sanjay Ghodawat University, Kolhapur

2020-21

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

EXM/P/09/00

Year and Program: 2020-21 S.Y.B Tech	**School of Technology**	**Department:Aeronautical**
Course Code: AET205	**Course Title: Aero Thermodynamics**	**Semester :III**
Day :Friday **Date :05-02-2021**	**End Semester Examination**	**Time:10.30-12.30** **Max Marks:50**

Instructions: 1) All Questions are compulsory.
2)Figure to the right indicates full harks.
3) Assume suitable datawherevernecessary and state it clearly.
4) Use ofscientific calculators is permitted.

		Marks	Bloom's Level	CO
Q.1	**Answer the following (any Two)**–			
a)	Define the following with proper examples i) Path Function ii) Point Function iii) Intensive Properties iv) Extensive Properties	8	L1	CO205.1
b)	Write down the general energy equation for steady flow system and simplify when applied for the followingsystems : i) Reciprocating air compressor ii) Steam turbine iii) nozzle, iv) throttle valve	8	L3	CO205.2
c)	10 kg of fluid per minute goes through a reversible steady flow process. Theproperties of fluid at the inlet are : p1 = 1.5 bar, ρ1 = 26 kg/m^3, C1 = 110 m/s and u1 = 910 kJ/kg andat the exit are p2 = 5.5 bar, ρ2 = 5.5 kg/m^3, C2 = 190 m/s and u2 = 710 kJ/kg. During the passage,the fluid rejects 55 kJ/s and rises through 55 metres. Determine : (i) The change in enthalpy (ii) Work done during the process	8	L3	CO205.2
Q.2	**Answer the following (any Two)**–			
a)	Write the following i) Stoichometric A-F ratio ii) Adiabatic flame temperature	8	L2	CO205.3
b)	Write the limitation of First law of thermodynamics and state the second law of thermodynamics.	8	L2	CO205.3
c)	A house requires 2 × 10^5 kJ/h for heating in winter. Heat pump is used toabsorb heat from cold air outside in winter and send heat to the house. Work required to operatethe heat pump is 3 × 10^4 kJ/h.	8	L3	CO205.4

Determine :
(i) Heat abstracted from outside
(ii) Co-efficient of performance

Q.3 Answer the following (any Two)–

a)	Using concept of Clausius inequality, define entropy as property of the system.	9	L2	CO205.5
b)	Explain Diesel cycle with PV and TSdiagramfor reciprocating compression ignition engines.	9	L2	CO205.5
c)	Write merits and demerits for the following i) Air refrigeration system ii) Vapor compression refrigeration system iii) Vapor absorption refrigeration system	9	L3	CO205.5

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