Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech II Year II Semester Supplementary Examinations February-2022
ENGINEERING THERMODYNAMICS
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 a Define closed, open and Isolated system with examples.   7M
   b What is quasi static process with example?   5M

OR

2 a What is the difference between Micro and Macroscopic thermodynamics?   6M
   b Define cycle. What is cyclic and non cyclic process?   6M

UNIT-II

3 a In a cycle which has five processes, heat transfers at five points. $Q_1=50$ Kj, $Q_2=$ 85KJ, $Q_3 = -30$Kj, $Q_4 = -70$Kj, $Q_5 = 135$Kj, the work transfer are $W_1 = 60$Kj, $W_2 = -40$Kj, $W_3 = 35$KJ, $W_4 = -20$Kj, $W_5 = 135$Kj Find the work transfer at fifth point.   7M
   b Derive SFEE for Turbine.   5M

OR

4 a What are the different modes in which energy is stored in a system?   7M
   b What is Steady flow energy equation for compressor?   5M

UNIT-III

5 a An inventor claimed to developed an engine that takes in 105MJ at a temperature of 400K, rejects 42 MJ at a temperature of, 200K and delivers 15 KWh of mechanical work. Would you advice is investing money to put this machine in the market.   8M
   b State second law of thermodynamics.   4M

OR

6 a What are the limitations of first law of thermodynamics?   5M
   b Show the equivalence of Clausius and Kelvin statement of second law.   7M

UNIT-IV

7 a Write Vander walls equation of state. How does it differ from the ideal gas equation of state?   6M
   b What is the gas equation for ideal gas?   6M

OR

8 a What is the difference between Ideal and Real gas?   6M
   b What is Avogadro's law?   6M

UNIT-V

9 a Draw PV and TS diagram for Otto cycle.   4M
   b A diesel Engine has a compression ratio of 14 and cut-off takes place at 6% of the stroke. Find the Air standard efficiency.   8M

OR

10 a Write down first and second Tds equation.   6M
   b What is joule Thomson coefficient? Why he is zero for ideal gas.   6M

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