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Roll No

CM-302 (GS)
B.E. III Semester Examination, June 2020
Grading System (GS)
Chemical Engineering Thermodynamics
Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions.
ii) All questions carry equal marks.

1. What is the difference between the classical and the statistical approaches to thermodynamics?
2. A three stage reciprocating flow compressor is designed to compress 800 liters of oxygen per minute at 30°C from 1 atm (a) pressure to 100 atm (a) pressure. Intercooling is done at every stage at 30°C. Calculate the theoretical work in litre atmosphere per minute required for reversible adiabatic compression of the gas, taking that the gas is ideal. What should be the discharge pressure for each stage $C_p/C_v = 1.4$ for this gas.
3. Explain the principle of Corresponding states. Write Law of corresponding states for van der Waal's gas.
4. Explain applications of the steady flow energy equation in Nozzle and Diffuser.
5. Define internal energy. Show that internal energy is state function.
6. What is the Physical Significance of Entropy? Prove that Entropy is a Property.
OR
Consider the human body as a system and apply the First Law of Thermodynamics to it.
7. Explain thermodynamics state of a system and state variable?
OR
In a certain process, 600 J of work is done on the system which gives off 250 J of heat. What is the change in internal energy for the process?
8. Define the following:(any two)
 - a) Steady state and Unsteady state process
 - b) Point function and Path function
 - c) Intensive and Extensive properties
9. What is Joule-Thomson effect? Describe the Joule-Thomson experiment. Also give the equation for Joule-Thomson coefficient.
