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Total No. of Questions: 8]

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Enroll No.....

ME-101

M.Tech.(Thermal)–I Sem (Reg./Ex.)

Examination, March -2021

Thermodynamics and Combustion

Time: Three Hours

Maximum Marks:70

Note: Attempt any five questions. (Each question carries equal marks)

- Q.5 (a) Why does the Gibbs function remain constant during phase transition.
- (b) What is critical state? Explain the terms critical pressure, critical temperature and critical volume of water?
- Q.6 (a) What are virial coefficients? When they become zero?
- (b) What do you understand by neutral and unstable equilibrium?
- Q.7 (a) Express the Vander walls constants in terms of critical properties.
- (b) How is the partial pressure in gas mixture related to the mole fraction?
- Q.8 (a) State & discuss theories of flame propagation.
- (b) What are differences in combustion taking place in open and closed systems?

- Q.1 (a) What do you understand by path function & point function? What are exact & inexact differential?
- (b) State and explain Zeroth Law of thermodynamics. Why it is called so?
- Q.2 (a) Define enthalpy. Why does the enthalpy of an ideal gas depend only on temperature?
- (b) What are the causes of irreversibility of a process?
- Q.3 (a) Draw the phase equilibrium diagram for a substance on p-v coordinates.
- (b) What do you understand by triple point?
- Q.4 (a) What do you understand by neutral and unstable equilibrium?
- (b) Explain Joule-Kelvin effect. What is inversion temperature?