Roll No. _____

END SEMESTER EXAMINATION
SEMESTER-III

COURSE CODE : AE-405 | **DURATION : 3 (THREE)HRS**
COURSE TITLE :HEAT POWER ENGINEERING | **MAXIMUM MARKS : 75**
SESSION : JULY-DEC'2021 | **PASS MARKS : 35 %**

NOTE:
1. All the questions are compulsory
2. Attempt any 5 (five) questions.
3. Mark for each question is shown against it.
4. Assume suitable logical data wherever necessary.

1. **(a)** What do you mean by Energy? Briefly explain conventional sources of energy and non-conventional sources of energy. **(5)**
(b) Discuss Otto cycle and Diesel cycle along with PV diagram and TS diagram. **(5)**
(c) Explain thermodynamic equilibrium. Briefly describe thermodynamic cycle. **(5)**

2. **(a)** Write down working of two stroke Petrol engine with suitable diagram. **(5)**
(b) Decribe intensive property and extensive property in detail. **(5)**
(c) Discuss reversible and irreversible process in Thermodynamics and explain the causes of irreversibility. **(5)**

3. **(a)** Explain the mechanism of simple vapour compression Refrigeration system along with suitable diagram. **(10)**
(b) Differentiate between real gas and ideal gas. **(5)**

4. **(a)** Discuss in detail the working principle and construction of Internal Combustion engine along with suitable diagram. **(10)**
(b) Discuss Clausius inequality. **(5)**

5. **(a)** Explain the following laws. **(2X3=6)**
i) Boyle's law
ii) Charles' law
iii) Gay-Lussac's law
(b) State first law of thermodynamics and also discuss its limitation. **(4)**
(c) State Zeroth Law of thermodynamics along with suitable example. **(5)**

6. **(a)** State Newton's law of cooling. **(5)**
(b) State the Kelvin Plank second law of thermodynamics and explain the concept of Perpetual Motion Machine of second kind (PMM-II) **(6)**
(c) Discuss the term Universe, Boundary and Surrounding as applied to thermodynamics **(4)**

7. **(a)** Write down the construction and working principle of reciprocating air compressor. **(5)**
(b) Write any three refrigerant along with its properties. **(5)**
(c) Explain Quasi static process **(5)**

8. **(a)** Write down the factors that affect comfort air conditioning. **(5)**
(b) Discuss working principle of summer air conditioning system and winter air conditioning system. **(5)**
(c) Explain the term Enthalpy and Internal energy **(5)**

xxxxxxxxxxxxxxxxxx