SANSKRITI UNIVERSITY	**SANSKRITI UNIVERSITY** Mathura, Uttar Pradesh	**Enrol. No:**

Semester End Examination - January 2022
Course Code: MEE 205 Course Name : Engineering Thermodynamics
School of Engineering & Information Technology
Programme: B.Tech(ME) (Regular & Lateral) **Semester: III**
Time: 3 hrs **Max. Marks:100**

Note: Use of Steam Tables and Mollier chart is permitted

PART - A (10 questions X 2 marks = 20 Marks)
Answer ALL the Questions

1. Attempts all parts. All parts carry equal marks. Write answer of each part in short.
   a. Write purpose of manometer and barometer. **[2]**
   b. Write about thermometry properties. **[2]**
   c. Differentiate between path function and point function. **[2]**
   d. What is the concept of continuum? **[2]**
   e. What happens to energy, entropy and energy of an isolated system? And why? **[2]**
   f. Differentiate between two-stroke and four-stroke engine. **[2]**
   g. Define dryness and wetness. **[2]**
   h. Write down first and second TdS equation. **[2]**
   i. Differentiate between Heat pump and Refrigerator **[2]**
   j. Define the term DBT & WBT. **[2]**

PART - B (4 questions X 5 marks = 20 Marks)
(Answer all questions)

2. Differentiate between intensive and extensive properties. **[5]**
3. Show that the Kelvin–Planck and the Clausius statement of the second law of thermodynamics are equivalent. **[5]**
4. What do you mean by reversible process? What are the conditions which must be satisfied by the process during reversible process? **[5]**
5. Explain specific humidity and relative humidity. **[5]**

PART - C (3 questions X 10 marks = 30 Marks)
Answer Three out of Four Questions

6. Define in pure substance by suitable phase change diagram the term (i) Triple Point (ii) Critical Point (iii) Saturation states (iv) Sub cooled state (v) Superheated vapour state. **[10]**
7. The Two Carnot engines work in series between the source and sink temperatures of 550 K and 350 K. If both engines develop equal power, determine the intermediate temperature. **[10]**
8.(a) Explain the law of thermodynamics which enables us to measure the temperature. **[10]**
   (b) Derive steady flow energy equation for steam turbine and boiler.
9.(a) What do you mean psychometric properties? And their application in air conditioning. **[10]**
   (b) Explain Carnot Engine cycle and their thermal efficiency.

PART - D (2 questions X 15 marks = 30 Marks)
Answer Two out of Three Questions

10. Describe air standard diesel cycle and also derive relation of thermal efficiency. **[15]**
11. Show the reversible cycle of the simple steam power plant on p-v, T-s and h-s diagram and explain its working in brief. **[15]**
12.(a) State first law of Thermodynamics and what are the limitations of that law? **[15]**
   (b) Prove that cycle efficiency of the Otto cycle depends only on the compression ratio.