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| TRIBHUWAN UNIVERSITY  INSTITUTE OF ENGINEERING  **Examination Control Division**  **2079 Bhadra** | Exam | Regular | | | |
| Level | BE | Full Marks | 80 |
| Program | BCE, BME, BGE | Pass Marks | 32 |
| Year / Part | I/I | Time | 3 hrs. |

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| **Subject**: - Fundamentals of Thermodynamics and Heat Transfer (ME 402) |

* Candidates are required to give their answer in their own words as far as practicable.
* Attempt **All** questions.
* The figures in the margin indicate **Full Marks**.
* **Necessary tables are attached herewith.**
* Assume suitable data if necessary.
* For air take Cp = 1005J/kgK and Cv = 718 J/kgK.

1. How will you find out whether a given variable is a thermodynamic property? How are those properties classified? Give examples. [4]
2. Define transient energy with its salient features. Differentiate between molecular potential energy and macroscopic potential energy of a state. [4]
3. Show that saturation curve is formed on P-v diagram by sketching constant temperature process lines. Sketch saturation curve and show all important points, lines and regions. [4]