Code No: R1621033 **R16** SET - 1

II B. Tech I Semester Supplementary Examinations, May - 2018
THERMODYNAMICS
(Com to ME, AE and AME)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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Steam tables to be supplied

PART –A

1. a) What are the causes of irreversibility? (2M)
   b) State the first law for a closed system undergoing a change of state (2M)
   c) What is meant by Clausius inequality (3M)
   d) Explain the term (a) Latent heat (b)sensible heat (3M)
   e) What is meant by dry bulb depression? (2M)
   f) Draw the Lenoir cycle on T-s diagram? (2M)

PART –B

2. a) What do you understand by the ideal gas temperature scale? (7M)
   b) Explain the working of Electrical Resistance thermometer with a neat sketch (7M)

3 a) Explain the Vander waals equation of state (7M)
   b) What are the uses of compression by charts? (7M)

4. a) What are the causes of entropy increase? (7M)
   b) How is the absolute scale independent of the working substance? (7M)

5. Steam initially at 0.4 Mpa, 300^{0}C is cooled at constant volume. (a) At what temperature will the steam become saturated vapour? (b) What is the quality at 90^{0}C? What is the heat transferred per kg of steam in cooling from 225^{0}C to 90^{0}C (14M)

6. a) Explain the importance of the psychometric with neat sketch. What is its importance of psychometric chart (7M)
   b) Discuss the significance of carrier's equation (7M)

7. In an air-standard Brayton cycle the air enters the compressor at 1 bar and 25^{0}C.The pressure after the compression is 3 bar. The temperature at turbine inlet is 650^0 C. Calculate per kg of air (a) heat supplied (b) heat rejected (c) work available at the shaft (d) temperature of air leaving the turbine and (e) cycle efficiency (14M)
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