

**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<sup>0</sup>C is cooled at constant volume. (a) At what temperature will the steam become saturated vapour? (b) What is the quality at 90<sup>0</sup>C? What is the heat transferred per kg of steam in cooling from 225<sup>0</sup>C to 90<sup>0</sup>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<sup>0</sup>C. The pressure after the compression is 3 bar. The temperature at turbine inlet is 650<sup>0</sup> 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)

