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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, February/March - 2022
BASIC MECHANICAL ENGINEERING
(Common to CE, ECE, MIE, PTM)

Time: 3 Hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1.a) Find the specific volume and enthalpy of 1 kg of steam at 0.8 MPa. i) When the dryness fraction is 0.9. ii) When the steam is superheated to a temperature of $300^0 C$. The specific heat of superheated steam 2.25 kJ/kg K.
  b) State first law of thermodynamics for a process and cycle. Bring out the limitations.[8+7]

2.a) Distinguish between: i) Open system and closed system ii) Heattransfer and work transfer.
  b) Classify the thermodynamic system and explain them with the help of simple diagrams.
[8+7]

3.a) Discuss the working of a four stroke SI engine along with valveting diagram.
  b) With the help of psychrometric chart explain various psychrometric processes. [7+8]

4.a) Demonstrate the working of a vapor compression refrigeration system with the help of neat sketch.
  b) How to make use of powdered coal as alternate fuel to act as a substitute for Diesel? Justify. [8+7]

5.a) How can you arrange gears for transmitting power from one shaft to another? Explain.
  b) Explain working principle of any pneumatic device in detail with suitable sketch. [8+7]

6.a) Sketch different types of gear trains used for transmission and explain.
  b) Differentiate between hydraulic power and power and pneumatic power control units.[7+8]

7.a) Explain Quick return mechanism in detail with neat sketch and explain its applications.
  b) Explain cam displacement diagram for the specified follower motion. [8+7]

8.a) Differentiate between fans, blowers and compressors.
  b) Explain the difference between single and multi-stage air compressors in detail. [7+8]

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