

Code No: 157EH

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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°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) Heat transfer 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 valvetiming 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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