

4th Sem, **Branch** : Mechanical Engg.**Subject** : Thermodynamics-I**Time** : 3 Hrs.**M.M.** : 100**SECTION-A****Note** : Multiple choice questions. All questions are compulsory. (10x1=10)

Q.1 The unit of energy is SI unit is _____. (CO01)

- a) Joule (J) b) Joule metre (Jm)
- c) Watt (W) d) Joule/metre (J/m)

Q.2 Gas laws are applicable to _____. (CO02)

- a) Gases as well as vapours
- b) Gases alone and not to vapours.
- c) Gases and steam
- d) Gases and vapours under certain conditions.

Q.3 In isothermal process _____. (CO1)

- a) Pressure is constant
- b) Volume is constant
- c) Temperature is constant
- d) Entropy is constant

Q.4 The first law of thermodynamics fails to decide _____. (CO01)

- a) The direction of the process
- b) The extent of conversion of one form of energy to another.
- c) Both these
- d) None of these

(1)

Q.5 Which properties of below is extensive properties (CO01)

- a) Temperature b) Volume
- c) Pressure d) Density

Q.6 An ideal gas as compared to a real gas at very high pressure occupies _____. (CO02)

- a) More volume b) Less volume
- c) Same volume d) None of the above

Q.7 The specific volume of water when heated from 0°C _____. (CO04)

- a) Increases steadily
- b) Decreases steadily
- c) First increases then decreases
- d) First decreases then increases

Q.8 The Economiser is used in boilers to _____. (CO05)

- a) Increase thermal efficiency of boiler
- b) Economise on fuel
- c) Extract heat from the exhaust the gases
- d) Increase flue gas temperature

Q.9 Otto cycle is a _____. (CO03)

- a) Constant pressure cycle
- b) Constant volume cycle
- c) Constant temperature cycle
- d) Constant entropy cycle

Q.10 The ratio of work-done per cycle to the stroke volume of the compressor is known as ____ (CO06)

- a) Compressor capacity
- b) Compression ratio

(2)

- c) Compressor efficiency
- d) Mean effective pressure

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Write example of intensive property. (CO01)
- Q.12 Write statement of Boyle's law. (CO02)
- Q.13 Describe polytropic process. (CO01)
- Q.14 Write statement of law of conservation of energy. (CO01)
- Q.15 Define entropy. (CO02)
- Q.16 Define ideal gas. (CO03)
- Q.17 Write the use of Mollier diagram. (CO04)
- Q.18 Describe mounting of a boiler. (CO05)
- Q.19 Define compression ratio. (CO06)
- Q.20 Write types of rotary compressors. (CO06)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Explain constant volume process with the help of P-V diagram. (CO01)
- Q.22 Explain isolated type thermodynamic system in brief. (CO01)
- Q.23 State & Explain Charle's law. (CO02)
- Q.24 Write a short note on isentropic process. (CO01)
- Q.25 Explain first law of thermodynamics. (CO01)
- Q.26 what is steady flow energy equation? (CO01)

- Q.27 Explain the P.V.T surface of an ideal gas. (CO02)
- Q.28 State and explain Vander-Wall's equation. (CO03)
- Q.29 With a neat diagram explain the process of formation of steam. (CO04)
- Q.30 Enlist the thermodynamic properties of steam. (CO04)
- Q.31 Differentiate between water tube boiler and fire tube boiler. (CO05)
- Q.32 Explain Cannot cycle. (CO06)
- Q.33 Draw P-V and T-S diagram for the otto and diesel cycle & explain the processes. (CO06)
- Q.34 Explain the working of single stage reciprocating air compressor with a neat sketch. (CO06)
- Q.35 Write five uses of compressed air. (CO06)

SECTION-D

Note: Long Answer type question. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Drive an expression for work done, internal energy and heat supplied for isobaric process. (CO01)
- Q.37 Explain second law of thermodynamic with the help of Kelvin planck's and classius statements. (CO01)
- Q.38 Explain the construction and working of Lancashire boiler with the help of neat sketch. (CO05)

Note: Course Outcome (CO) mentioned in the question paper is for official purpose only.