

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 _____.
 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)

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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 teperature 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)

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- 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.