S. B. Roll. No.....

THERMODYNAMICS-I
4th Exam/Mech./5253/Nov'24
(For 2018 Batch Onwards)

Duration: 3Hrs. **M.Marks:75**

SECTION-A

Q1. Fill in the blanks. **15x1=15**

a. The system and surrounding put together forms a_____
b. The sum of internal energy and the external work done by the gas is known as_____
c. Universal gas constant (R_u) is the product of_____
d. State the equation that give characteristic equation of a gas_____
e. The work done in constant volume process is_____
f. The relation between heat and work is_____
g. Ideal gas obey gas laws at all ranges of _____and _____
h. Dryness fraction of dry steam is_____
i. Latent heat of steam is_____
j. _____cycle cannot be achieved in reality.
k. Triple point is that point where_____
l. The centrifugal pump work under _____process.
m. An ideal gas is a gas having no forces of _____attraction.
n. High pressure boilers are _____tube boilers.
o. Otto cycle is also known as _____cycle.

SECTION-B

Q2. Attempt any six questions. **6x5=30**

i. Write a short note on a) Conduction b) Convection c) Radiation.
ii. Compare Reciprocating air compressor with Rotary air compressor.
iii. List the assumptions made in the analysis of air standard cycle.
iv. Write the introduction to modern boiler.
v. Explain Dryness Fraction.
vi. What is Kelvin Planck statement and Clausius statement?
vii. What do you mean by isochoric process? Write the equation representing this process.
viii. Give the comparison between Boyle's Law and Charles' Law

SECTION-C

Q3. Attempt any three questions. **3x10=30**

a. Distinguish between reversible and irreversible process with example.
b. How do we obtain characteristic gas equation after combining the Boyle's Law and Charles' Law?
c. Derive study flow energy equation.
d. Explain Construction and working of Babcock and Wilcox boiler with neat sketch.
e. Explain formation of steam with neat sketch.
f. A vessel of capacity $4m^3$ has 16 kg of an ideal gas having molecular weight 25 at a temperature of 15^0C. Find the pressure of the gas in bar.

P.S.B.T.E. & I.T.

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