

B.Tech.
2022
3rd Sem

B.Tech Food Technology
IIIrd Semester Examination 2022
Course Code- BFTC-304
Course Title-Thermodynamics

Total Time: 03 hours

Note:

Max Marks: 75

1. It is necessary to answer all the questions of Section-A.
 2. Answer any three questions from Section-B.
 3. Different parts of the same question are to be attempted adjacent to each other's.
 4. Assume suitable data wherever required.
 5. Calculator is allowed.
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Section-A (1*15=15 Marks)

1. Attempt all the questions from
 - i. What do you understand by Zeroth law of thermodynamics?
 - ii. Differentiate between work producing plants and work consuming plants?
 - iii. What is the difference between open system and closed system?
 - iv. Explain the thermodynamic equilibrium?
 - v. Write down about the three modes of heat transfer.
 - vi. Define the specific heat at constant pressure.
 - vii. What do you understand by heat engine?
 - viii. Write down the kelvin Planck statement of second law of thermodynamics?
 - ix. What is PMMI?
 - x. What are the assumptions for gas power cycle?
 - xi. What is the unit of entropy?
 - xii. What do you understand by compression ratio?
 - xiii. Write down the expression for quality of vapour.
 - xiv. What is saturation state?
 - xv. What do you understand by adiabatic process?

Section-B (3*20=60 Marks)

1. What do you understand by thermodynamic work transfer. Derive the expression for non-flow work during adiabatic process?
2. What do you understand by Otto cycle. Derive the expression for the efficiency for Otto cycle?
3. Helium contained in a cylinder fitted with a piston expand reversibly according to the law $PV^{1.3} = C$. The initial temperature, pressure and volume are 222 K, 5 bar, 0.055 m³. After expansion the pressure 2 bar. Calculate the work done during the process.
4. What do you understand by Diesel cycle. Derive the expression for the efficiency for the Diesel cycle?