

LNCT UNIVERSITY, BHOPAL

Enrolment No.....

CS-204

**B.TECH I & II SEMESTER
EXAMINATION [JUNE-2025]
MECHANICAL ENGINEERING**

Maximum Marks:70

Time Allowed:3 Hours

Note: -Attempt all questions Internal choice are given.

(SECTION -A)

1. Short Answer Type Questions (Attempt Any Five)

[5x6=30]

- i. Define mechanical properties of engineering materials. State any twelve properties.
- ii. Draw and explain Iron-Carbon equilibrium diagram.
- iii. Define welding process, give its classification and explain electric arc welding process.
- iv. What is casting? Give its types and describe three casting defects with diagram.
- v. Explain Carnot cycle with suitable PV and TS diagrams and give expression for thermal efficiency.
- vi. State and prove Pascal's law. Write applications based on Pascal's law?
- vii. Discuss different types of errors in measurement. Also explain accuracy and precision.

(SECTION -B)

2. Long Answer Type Questions (Attempt Any Four)

[4x10=40]

- i. Make calculations for the minimum diameter of a steel wire which is required to raise a load of 6 kN. Presume that the wire can sustain a maximum stress of 120 MN/m². Also calculate extension in 3 m length of the wire. Take modulus of elasticity E = 200 GPa.
- ii. Explain Principle, construction and function of the Lathe Machine parts with the neat sketch.
- iii. A flat plate of area 1.5×10^6 mm² is pulled with speed of 0.4 m/s relative to another plate located at a distance of 0.15 mm from it. Find the force and power required to maintain this speed, if the fluid separating them is having viscosity as 1 poise. [1 poise = 0.1 Ns/m²]
- iv. Calculate the specific weight, density and specific gravity of one litre of liquid which weighs 7N.
- v. A reversed Carnot cycle engine receives heat at -10°C and delivers it at 30°C. the power input is 4.8kW. What is the heating and the refrigerating effect?
- vi. Explain the working of manometer for pressure measurement. Also relate absolute pressure, gauge pressure and vacuum pressure.