

Seat No. **OCT-NOV 2025 WINTER EXAMINATION****12609 Bachelor of Technology (NEP-2.1)****Sub. Name: Basic Mechanical Engineering****Sub. Code: 114854****Day and Date: Wednesday,04-02-2026****Total Marks: 60****Time: 10:30 AM To 12:30 PM****Instructions: 1. Draw neat labelled diagrams wherever necessary
2. Figures to the right indicate full marks****Special Inst.: Que. 1 is compulsory
Solve any three questions from Que 2 to Que. 5****Q1) Solve following MCQ.****[6]**

- i. In a diesel engine, the ignition of fuel occurs due to
 - A. Spark plug
 - B. High compression temperature
 - C. High fuel temperature
 - D. Electric heater

- ii. The main function of power plant is to
 - A. Store electricity
 - B. Convert mechanical energy into electrical energy
 - C. Convert chemical energy into heat
 - D. Produce electricity from solar power

- iii. A pump is a device used to
 - A. Convert mechanical energy into hydraulic energy
 - B. Convert hydraulic energy into mechanical energy
 - C. Convert thermal energy into mechanical energy
 - D. Convert electrical energy into thermal energy

- iv. An automobile is primarily used for
 - A. Power generation
 - B. Material Processing
 - C. Transportation of people and good
 - D. Manufacturing

- v. Advanced manufacturing system mainly focus on
 - A. Manual production
 - B. Traditional machines
 - C. Automation and computer integration
 - D. Hand tools

- vi. A robot is defined as
- A. A device that produces power
 - B. A programmable machine capable of performing tasks automatically
 - C. A manual machine tool
 - D. A simple motor

Q2) Solve the following [18]

- a. Explain second law of thermodynamics [6]
- b. Define internal combustion engine and list out main components of I.C. engine [6]
- c. Explain working principle of hydroelectric power plant with neat sketch. [6]

Q3) Solve the following [18]

- a. Explain simple gear train with neat sketch [6]
- b. Sketch and explain reciprocating compressor [6]
- c. What is a four bar chain and explain its any one inversion [6]

Q4) Solve the following [18]

- a. Define manufacturing process and explain any one metal removal process [6]
- b. Write a short note on three D printing [6]
- c. Define sensor and describe different types of sensor [6]

Q5) Solve the following [18]

- a. Differentiate between renewable and non-renewable energy sources [6]
- b. List out the various advantages and applications of CNC machine [6]
- c. What are the applications of robots in material handling, processing and assembly and inspection [6]

End Of Question Paper

Important Note for Chief Exam Officer / SRPD Coordinator / Sr Supervisor/ Student -

This Question Paper may be distributed for following Subjects as common code.

सदरची प्रश्नपत्रिका खालील विषयांकरिता वितरित करता येईल.

1] (12609) Bachelor of Technology (NEP-2.1) (114854) Basic Mechanical Engineering Part 1 SEM 1