

Code No: **R231104**

R23

SET - 1

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM

I B. Tech I Semester Supplementary Examinations June 2025

BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to CSE, IT, CSE-AI&ML, CSE-AI, CSE-DS, CSE-AI&DS, AI&DS&AI&ML)

Time: 3 hours

Max. Marks: 70

. Question paper consists of Part A & Part B

All the questions in Part-A is Compulsory

Answer ONE Question from Each Unit in Part-B

In Part A – Q.No. 1.a) to e) and in Part B Q.No. 2 to 7 should be answered at one place (may be upto page no. 17).

In Part A – Q.No. 1.f) to j) and in Part B Q.No. 8 to 13 should be answered at one place (may be from page no.18 to 32) in answer script.

PART –A

(10 Marks)

- | | | |
|---|---|-----|
| 1 | a) Define Civil Engineering. | [1] |
| | b) List the different grades of cement used in the construction. | [1] |
| | c) Define the term Contour. | [1] |
| | d) List the types of Harbors based on their function. | [1] |
| | e) Define the term "Hydrology". | [1] |
| | f) Outline an example of common ferrous alloy and its application. | [1] |
| | g) Define Malleability? | [1] |
| | h) State any two types of metal joining processes. | [1] |
| | i) State the any two primary differences between CI and SI engines. | [1] |
| | j) List the applications of robots. | [1] |

PART – B

(60 Marks)

Basic Civil Engineering

Unit-I

- | | | |
|-------------|--|-----|
| 2. | Explain the classifications of bricks and the qualities of a good brick. | 10M |
| (OR) | | |
| 3. | Discuss the scope of Geotechnical Engineering and Transportation Engineering in the society. | 10M |

Unit-II

- | | | |
|----|---|-----|
| 4. | Find the level difference between A and B by Height of instrument method if the following consecutive readings: 0.914(A), 1.700, 1.955, 2.190, 2.650, 2.720, 2.890, 3.187, 4.245(B) were taken with a levelling instrument on a continuously sloping ground. The Reduced Level (RL) of A was 150.00m. Apply usual checks. | 10M |
|----|---|-----|

(OR)

- | | | |
|----|--|-----|
| 5. | Report the Whole Circle Bearings for the following bearing system.
(i) N87°25'W (ii) S39°40'E (iii) N72°15'E (iv) S41°55'W (v) N65°30'E | 10M |
|----|--|-----|

Unit-III

- | | | |
|----|--|-----|
| 6. | Discuss the types of pavements and differentiate Flexible Pavements and Rigid Pavements. | 10M |
|----|--|-----|

(OR)

- | | | |
|----|--|-----|
| 7. | Illustrate the Hydrologic cycle and its components with a neat sketch. | 10M |
|----|--|-----|

Basic Mechanical Engineering

Unit-I

8. Discuss the technological advancements in the following sectors. 10M
i) Energy sector ii) Automotive sector

(OR)

9. Explain in detail about Smart material, different types of smart materials and their applications. 10M

Unit-II

10. Explain the procedure involved in the sand casting process with a neat sketch. 10M

(OR)

11. Explain the working of 4- Stroke CI engine with a neat sketch. 10M

Unit-III

12. Explain the working of a Nuclear power plant with a neat sketch. 10M

(OR)

13. Explain the different types of Robot Configurations with simple diagrams. 10M
