

Name:
Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, Decemebr-2021

Program Name: B.TECH-EL

Course Name : Mechanical System of e-Vehicles

Course Code : MECH4031P

Nos. of page(s) : 02

Semester : VII

Time : 03 hrs.

Max. Marks: 100

SECTION A (20 Marks)

- 1. All questions are compulsory in this section.**
- 2. Total 05 questions are there in this section and each question is of 4 Marks.**
- 3. Short answer type questions.**

| S. No. | | Marks | CO |
|--------|--|-------|-----|
| Q1 | Define different types of chassis frame and various loads acting on it. | 4 | CO1 |
| Q2 | Summarize both active and passive safety system in a vehicle. | 4 | CO2 |
| Q3 | Compare dependent and independent suspension system. | 4 | CO2 |
| Q4 | Discuss following 1. Camber Angle 2. Castor Angle | 4 | CO3 |
| Q5 | Illustrate the purpose of Antilock Braking System (ABS) and its working. | 4 | CO4 |

SECTION B (40 Marks)

- 1. All questions are compulsory in this section.**
- 2. Total 04 questions are there in this section and each question is of 10 Marks.**
- 3. One question is having an internal Choice.**
- 4. Write brief notes.**

| | | | |
|----|--|----|-----|
| Q1 | Describe construction, working, advantages and dis-advantages of Synchromesh gear box in details. | 10 | CO1 |
| Q2 | Articulate power steering system by specifying need and construction. | 10 | CO2 |
| Q3 | Illustrate the following component of an e-Vehicle with proper sketch. 1. Power Window 2. Lane Departure Warning System (LDWS) | 10 | CO3 |
| Q4 | Distinguish between Cruise Control and Adaptive Cruise Control System (ACC) with proper labeled diagram. OR Distinguish between active and passive safety system in a vehicle with labeled diagram. | 10 | CO4 |

SECTION C (40 Marks)

1. Write long answers.

2. One question is having an internal Choice.

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|----|--|----------|-----|
| Q1 | Illustrate construction & working, advantages and disadvantages on Differential in an Automobiles. | [10+5+5] | CO3 |
| Q2 | Discuss the complete drive line of an automobile with proper labeled sketch and explain working of each components. OR Explain construction, working, advantages and dis-advantages of Synchromesh gear box in details. | [20] | CO4 |