

Course outline

How does an NPTEL online course work?

Module 1 - Overview of Electric Vehicles in India

Module 2 - Vehicle Dynamics

Module 2 and 3 - Vehicle Dynamics and EV Subsystems

- Lecture 17 - Drive Cycles and Energy used per km - Part 1
- Lecture 18 - Drive Cycles and Energy used per km - Part 2
- Lecture 19 - EV Subsystem: Design of EV Drive Train - Part 1
- Lecture 20 - EV Subsystem: Design of EV Drive Train - Part 2
- Week 3 Slide Content
- Week 3 Feedback Form: Electric Vehicles and Renewable Energy

 Quiz: Week 3: Assignment 1

 Quiz: Week 3: Assignment 2

 Week 3: Solutions

Module 4 - Storage for EVs

Module 4 - Storage for EVs (contd)

Module 5 - Fundamentals of battery pack design

Module 5 and 6 - Battery Pack Design, Motors and Controllers

Module 6 - EV Motors and Controllers

Module 7&8 - Battery Charging and Swapping, Analytics

Module 9: Renewable Energy - Introduction

Module 10: Renewable Energy - Solar and Wind Energy

Module 11: Renewable Energy

Live Session

DOWNLOAD VIDEOS

Pack Design, Motors and Controllers

Module 6 - EV Motors and Controllers

Module 7&8 - Battery

Week 3: Assignment 1

The due date for submitting this assignment has passed.

Due on 2021-08-25, 23:59 IST.

As per our records you have not submitted this assignment.

Q 2.5. a. Prepare a spread sheet for 2-wheeler IDC using data given in slide 2-wheeler/Auto Indian Drive Cycle (IDC). Obtain the traction Force, traction Power, and the torque required every second. Compute the total energy consumed and the distance travelled. Obtain Wh/km for the vehicle. Assume $R=0.3$ and gradient as 0° .

Mass (kg): M	190		
g (m/s ²)	9.81		
Rolling Resist: μ (kN/kN)	0.013		
Cd (Drag Coefficient)	0.9		
ρ (kg/m ³)	1.2		
A (m ²) (Projected Area)	0.5	Wheel radius(m)	0.28
Drive cycle	IDC-2W	Regen eff factor R	0.3

1) Compute the total energy consumed (Wh)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 9,12

1 point

2) Compute the Distance travelled (m)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 630,680

1 point

3) Compute the Wh/km for the vehicle

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 13,19.5

1 point

b. Now assume that at 100 seconds in the drive cycle, the vehicle moves at constant speed, but climbs a slope of 5° for 10 seconds. The vehicle then goes to zero speed in the next eight second, just like it does from 100 sec to 108 sec in IDC. Now compute energy required, distance travelled and Wh/km, again assuming $R=0.3$

4) Compute the Energy required (Wh)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 11,15

1 point

5) Compute the Distance travelled (m)

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 680,720

1 point

6) Compute the Wh/km

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 15,22

1 point

No, the answer is incorrect.
Score: 0

Accepted Answers:
(Type: Range) 13,19.5

1 point