

Course outline

How does an NPTEL online course work?

Module 1 - Overview of Electric Vehicles in India

Module 2 - Vehicle Dynamics

Announcement on Week 2

Lecture 10 - Forces acting when a vehicle move

Lecture 11 - Aerodynamic drag, Rolling Resistance and Uphill Resistance

Lecture 12 - Power and Torque to accelerate

Lecture 13 - Putting it all together - 1

Lecture 14 - Putting it all together - 2

Lecture 15 - Concept of Drive Cycle - 1

Lecture 16 - Concept of Drive Cycle - 2

Week 2 Slide Content

Week 2 Feedback Form: Electric Vehicles and Renewable Energy

Quiz: Week 2: Assignment 1

Quiz: Week 2: Assignment 2

Quiz: Week 2: Assignment 3

Quiz: Week 2: Assignment 4

Quiz: Week 2: Assignment 5

Week 2: Solutions

Module 2 and 3 - Vehicle Dynamics and EV Subsystems

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

Week 2: Assignment 3

The due date for submitting this assignment has passed.

Due on 2021-08-18, 23:59 IST.

As per our records you have not submitted this assignment.

Note: The questions in this assignment is connected with Week 2: Assessment 2.

2.2 b) Assume vehicle acceleration is some value for first ten seconds, and half as much for next ten seconds to still reach 50 kmph in 20 seconds. Now again compute traction force, Power and Torque at 50 kmph.

Vehicle	Traction Force (N)	Power (kW)	Toque (Nm)
2-wheeler	A	D	G
3-wheeler	B	E	H
4-wheeler	C	F	I

1) The value of A is

No, the answer is incorrect. Score: 0

2) The value of D is

No, the answer is incorrect. Score: 0

3) The value of G is

No, the answer is incorrect. Score: 0

4) The value of B is

No, the answer is incorrect. Score: 0

5) The value of E is

No, the answer is incorrect. Score: 0

6) The value of H is

No, the answer is incorrect. Score: 0

7) The value of C is

No, the answer is incorrect. Score: 0

8) The value of F is

No, the answer is incorrect. Score: 0

9) The value of I is

No, the answer is incorrect. Score: 0

10) Value of K_1 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

11) Value of x_1 is

No, the answer is incorrect. Score: 0

12) Value of y_1 is

No, the answer is incorrect. Score: 0

13) Value of z_1 is

No, the answer is incorrect. Score: 0

14) Value of K_2 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

15) Value of x_2 is

No, the answer is incorrect. Score: 0

16) Value of y_2 is

No, the answer is incorrect. Score: 0

17) Value of z_2 is

No, the answer is incorrect. Score: 0

18) Value of K_3 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

19) Value of x_3 is

No, the answer is incorrect. Score: 0

20) Value of y_3 is

No, the answer is incorrect. Score: 0

21) Value of z_3 is

No, the answer is incorrect. Score: 0

2.2 c) To reach maximum speed v_f in T seconds, if a vehicle accelerates at a rate " a " for first $T/2$ time and at a rate " $a/2$ " from $T/2$ to T . It therefore gives ($v_f - v_0$) = $a \cdot T/2 + (a/2) \cdot T/2 = (3/4) \cdot aT$ and $a = (v_f - v_0) \cdot (4/3T)$.

(Consider the vehicle starts from rest while answering below questions)

If the average power During acceleration is expressed as: $K_1 \cdot m^{x_1} \cdot v_f^{y_1} \cdot T^{z_1}$

10) Value of K_1 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 0.5

11) Value of x_1 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

12) Value of y_1 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 2

13) Value of z_1 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) -1

If the average power At the end of time T is expressed as: $K_2 \cdot m^{x_2} \cdot v_f^{y_2} \cdot T^{z_2}$

14) Value of K_2 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Range) 0.6,0.7

15) Value of x_2 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

16) Value of y_2 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 2

17) Value of z_2 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) -1

If the average power At the end of time T , assuming linear acceleration, is expressed as: $K_3 \cdot m^{x_3} \cdot v_f^{y_3} \cdot T^{z_3}$

18) Value of K_3 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

19) Value of x_3 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

20) Value of y_3 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 2

21) Value of z_3 is

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

18) Value of K_3 is (Correct upto 2 decimal places)

No, the answer is incorrect. Score: 0

Accepted Answers: (Type: Numeric) 1

19) Value of x_3 is