MODULE 2 – Introduction to Technology Of EV

2.5 Summary

Practice Problems

### Question 1a An electric car has a gasoline fuel tank and a vehicle inlet to charge it from the grid. The internal combustion engine never directly powers the wheel but is used to run a generator to charge the battery of the car.

What is the vehicle type that is described?

1. Series type HEV
2. Parallel type HEV
3. Series type PHEV
4. Parallel type PHEV

Ans. C

### Question 1b How does the efficiency of this car compare to other vehicle types when considering overall city and highway driving?

1. Comparable to an all electric vehicle when driving from a battery charged from the grid
2. Comparable to an all electric vehicle when driving from a battery charged from the internal combustion engine
3. Lesser efficiency than a internal combustion engine vehicle
4. None of the above

Ans. A

### Question 1c Does the car require a power-split?

1. Yes
2. No

Ans. B

### Question 2a In a city, the electricity tariffs are such that the price is 0.3$/kWh from 6PM to 10 PM and 0.2$/kWh otherwise. This because the peak load on the grid occurs in the evening and they want to encourage customers to use energy outside the peak hours. An EV with a 30kWh battery is connected to a 10kW charging system at 6PM to charge the battery fully. Let us assume that charging always occurs at 10kW.

What is the cost of charging the car?

1. 3$
2. 6$
3. 9$
4. 12$

Ans. C

### Question 2b A new smart charging scheme is introduced by which the charging is delayed by the charger to always start at 10PM when the lower tariffs begin. What is the cost of charging the car?

1. 3$.
2. 6$
3. 9$
4. 12$

Ans. B

### Question 3 Given the table below: estimate the charging time in order to charge the car for a trip of 100 km for each vehicle, using a 3.7 kW charger. Do this by completing the table. You can do this by dropping the numbers in the right table cells. You have two attempts for this question.

