

Electric Vehicle Q&A (Based on Training Manual)

Q1. What is the primary source of energy in an Electric Vehicle (EV)?

A1. EVs use batteries to store electrical energy, which is later supplied to the motor for propulsion.

Q2. How is the flow of electricity regulated from batteries to the motor in an EV?

A2. The flow is managed by a motor controller, which acts like the "brain" of the power system.

Q3. What is regenerative braking in EVs?

A3. Regenerative braking allows the motor to act as a generator, converting the vehicle's momentum into electricity and recharging the battery.

Q4. How long does regular charging of an EV take?

A4. Regular charging takes about 8–9 hours.

Q5. How much time is required for rapid charging of an EV?

A5. Rapid charging takes about 60 minutes for 50% of full charge.

Q6. What type of motor is commonly used in EVs?

A6. EVs generally use AC induction motors.

Q7. How do EVs differ from internal combustion engine (ICE) vehicles in terms of noise?

A7. EVs are virtually silent while idling, unlike ICE vehicles that produce noise.

Q8. What is the operating cost of an EV compared to petrol vehicles (as per 2006 data)?

A8. EVs cost about 0.40 paisa per kilometer, while petrol vehicles cost at least Rs. 2.53 per kilometer.

Q9. Which countries are major markets for EVs?

A9. Europe, Japan, and the U.S. are leading EV markets due to emission laws, high fuel prices, and urban congestion.

Q10. Name three benefits of driving an EV.

A10. Quiet and clean driving, lower operating costs, and environmental friendliness.

Q11. What is the maximum speed of the Reva car?

A11. The Reva car has a top speed of 80 km/h.

Q12. What is the range of the Reva on a single charge?

A12. It can travel about 80 km per charge, extendable to 100 km with mid-day charging.

Q13. What is the capacity of the Reva's battery pack?

A13. The pack consists of eight 6V batteries, giving a nominal 48V and about 200 Ah capacity.

Q14. What is the purpose of the Energy Management System (EMS) in Reva?

A14. EMS optimizes charging, monitors battery health, and improves vehicle performance.

Q15. What are Climate Control Seats (CCS) in Reva?

A15. CCS is a patented technology that cools/heats seats efficiently, consuming less than 10% of energy used by conventional AC systems.

Q16. How does the Reva's body construction differ from traditional vehicles?

A16. It uses high-impact ABS polymer panels instead of sheet metal, making it dent-proof and recyclable.

Q17. What does the low battery light indicate in the Reva?

A17. It starts flashing below 35% State of Charge (SOC) and turns solid below 25%.

Q18. What is the self-discharge rate of Reva's lead-acid batteries?

A18. About 1.6 Ah per day.

Q19. Why does the SOC gauge sometimes increase after resting?

A19. Because the specific gravity of the electrolyte stabilizes after 2–3 hours, giving a more accurate reading.

Q20. Why is ventilation necessary during battery charging?

A20. To avoid accumulation of hydrogen gas, which is explosive at 4% concentration.

Q21. What is the overall energy efficiency of the charger + battery system in Reva?

A21. About 64% (Charger ~84%, Battery ~76%).

Q22. What is the recommended depth of discharge (DoD) for maximum efficiency?

A22. 80% discharge before recharging.

Q23. How often should batteries in Reva be watered?

A23. Once every 2 weeks or every 300 km, whichever comes earlier.

Q24. What should be used for watering the batteries?

A24. Only demineralized water, not tap water.

Q25. What is the specific gravity (SG) range of fully charged and discharged batteries?

A25. Fully charged: 1.28; Fully discharged: 1.18.