

Question Bank (K- scheme)

Unit Test I

Course: ELECTRIC VEHICLE TECHNOLOGY

Code: (315335)

Abbreviation - EVT

Semester: 5K

Program: EE

UNIT I: Basics of Electric Vehicles (10 M)

2 Marks Questions:

- 1) State the types of electric vehicles.
- 2) List any four sensors used in Electric vehicle.
- 3) State the meaning of Range Extended Electric Vehicle (REEV).

4 Marks Questions:

- 4) Describe the history and evolution of electric vehicles.
- 5) There is a renewed need for EVs in today's world. Justify.
- 6) Compare electric vehicle and internal combustion engine vehicles based on the following parameters.
 - a) Environmental impact
 - b) Power source
 - c) Maintenance
 - d) Gear change
 - e) noise level
 - f) Vibration level
 - g) Capital cost
 - h) Running cost
- 7) Draw the block diagram of an electric vehicle and label the subsystems.
- 8) Discuss the advantages and disadvantages of EVs over ICEVs.

UNIT II: Electric Vehicle Drives (20 M)

2 Marks Questions:

- 9) Classify electric drives for electric vehicle based on types of motor.
- 10) State the ranges of power ratings for a) buses b) Trucks.
- 11) Why does car need a power rating of above 30kw.

4 Marks Questions:

- 12) Explain the operation principle of Synchronous reluctance Motor.
- 13) List the advantages and limitations of various types of motors used in EVs.
- 14) Compare EV motors on the basis of –
 - (i) Power-to-weight ratio
 - (ii) Torque –speed characteristics
 - (iii) Cost of controller
 - (iv) cost of motor
- 15) State the criteria for selection of rating of EV motors.
- 16) Explain the mechanical and electrical connections of motors in EVs.
- 17) Why is the torque – speed characteristics important for selecting a motor for EV.
- 18) Draw the block diagram of BLDC motor for i) torque control ii) speed control
- 19) Explain induction motor drive for electric vehicle.

UNIT III: Batteries and Energy Storage Systems –PART I (08 M)

2 Marks Questions:

20) Define i) energy density ii) specific energy.

21) State the meaning of “deep cycle” of a battery. How does it affect battery life.

4 Marks Questions:

22) List the different batteries used in electric vehicles.

23) List the basic specifications required to be mentioned for a battery with their significance.

24) Explain lead acid battery. State their advantages and disadvantages.

25) Explain Li-ion battery. State their advantages and disadvantages.
