VIT
Vellore Institute of Technology

School of Mechanical Engineering

Continuous Assessment Test – II, September 2019, Fall Semester 2019-20

B.Tech Mechanical with spl in Automotive Engineering

Course Code	: MEE1035	Duration	: 90 minutes
Course Name	: Automotive Electricals	Max. Marks	: 50
Slot/Batch	: B1+TB1	Faculty	: Prof. T.Vijayakumar

- Avoid irrelevant answers
- Make your sketches neatly with pencil
- Answer all the questions

Part A (5x10=50)

1. The internal resistance of a lead acid battery needs to be determined. Explain how it can be done What is the impact of internal resistance on the cell terminal voltage during discharging and charging of a battery? Explain your answers with relevant graphs and sketches.

2. Studies by researchers on batteries have found that the performance of the battery greatly depend upon the discharge rate and temperature. Justify the statement with relevant graphs and theory.

3. Regenerative braking is one of the latest developments in automotive industries where the kinetic energy available in the brakes are converted and stored as electrical energy. Suggest a suitable cell technology that can be effectively used along with the regenerative braking system to store and use the electrical energy. Explain the technology with relevant sketches.

4. A starter motor has to be designed to drive a diesel engine. The diesel engine will be operated in various climatic conditions. What are all the factors that need to be considered to determine the minimum speed at which the starter motor can drive the engine? Explain the factors in detail.

5. Explain the principle of commutation and the effect of armature reaction in a DC generator.