

Roll No.

Total No. of Questions : 09]

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B.Tech. (Sem. – 5th)

AUTOMOTIVE ELECTRICALS AND SYSTEMS

SUBJECT CODE : AE - 305Paper ID : [A0715]

[Note : Please fill subject code and paper ID on OMR]

Time : 03 Hours

Maximum Marks : 60

Instruction to Candidates:

- 1) Section - A is **Compulsory**.
- 2) Attempt any **Four** questions from Section - B.
- 3) Attempt any **Two** questions from Section - C.

Section - A**Q1)****(10 × 2 = 20)**

- a) What is earth return system?
- b) What is the indication of fully charged battery?
- c) What do you mean by armature reaction?
- d) If the rotor speed of an alternator is 1500 rpm and the frequency of output voltage is 50 Hz, find the no. of poles on rotor.
- e) Explain why dc motor has high starting torque.
- f) What is ballast resistor and where is it used?
- g) Define the efficiency of battery.
- h) What are head light leveling devices?
- i) Write the name of different types of spark plugs.
- j) Draw the circuit of bridge rectifier.

Section - B**(4 × 5 = 20)****Q2)** Discuss different types of test which are carried out on batteries.**Q3)** Discuss the drive arrangements in Electric vehicles.**Q4)** Draw speed-torque characteristics of a dc series motor, and on the basis of this, comment why dc series motor should not be started at no load.**Q5)** With the help of proper circuit diagram explain the transistorized ignition system.**Q6)** What do you mean by automatic illumination system? Discuss in brief.**Section - C****(2 × 10 = 20)****Q7)** What is a fuel cell? Discuss the working of a hydrogen type fuels cells in details.**Q8)** Discuss basic working principle, construction and characteristics of a dc shunt generator.**Q9)** Draw wiring diagram for typical automotive wiring systems. Also give a brief description about cables used in automotive wiring system.