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**Sixth Semester B.E. Degree Examination, June/July 2016**  
**Auto Electrical and Electronics System**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting  
at least TWO questions from each part.**

**PART – A**

- 1 a. Briefly discuss about the selection and positioning of battery used in automotive vehicle. (06 Marks)  
 b. Explain the factors affecting the charging battery. (04 Marks)  
 c. With sketch, explain the working principle of lead acid battery with equation of chemical reaction. (10 Marks)
- 2 a. List out the requirements of charging system. (05 Marks)  
 b. Why road trucks get more life out of their generator brushes as compared to a car. (05 Marks)  
 c. Explain with full circuit, working principle of alternator. (10 Marks)
- 3 a. List out the factors influencing the ability to reach the minimum speed of starter motor in automotive vehicle. (05 Marks)  
 b. With neat sketch, explain the Bendix drive (inertia drive) construction and working principle. (10 Marks)  
 c. Mention the advantages of electronic control starter. (05 Marks)
- 4 a. Explain with neat sketch, electronic ignition system used in a car and list out the advantages of same. (10 Marks)  
 b. What is MBT timing? Why ignition advance angle cannot be more than 30 – 40° degrees. (10 Marks)

**PART – B**

- 5 a. With necessary sketches, explain the head light aiming and leveling. (07 Marks)  
 b. Explain the following with circuit :  
     i) Engine cooling fan (low and high speeds)  
     ii) Wind screen wiper with rain module. (10 Marks)  
 c. Briefly discuss about dynamic bending of head light. (03 Marks)
- 6 a. List out any five functional requirements of heating and ventilation system. (05 Marks)  
 b. With the suitable sketch, explain the construction and working principle of air conditioning system used in vehicle. (10 Marks)  
 c. Describe briefly about the screen heater with time relay, with neat circuit diagram. (05 Marks)
- 7 a. List out the emission control techniques used for the reduction of oxides of nitrogen. (04 Marks)  
 b. Explain the complete vehicle control system with block diagram. (10 Marks)  
 c. With suitable sketch, explain the hydrogen fuel cell used in automotive vehicle. (06 Marks)
- 8 a. With suitable diagram, explain the working principle 3-channel ABS, used in passenger car. (10 Marks)  
 b. List out the various methods of traction control and compare them with suitable graph of wheel slip with time. (05 Marks)  
 c. Explain the infrared central locking system used in car with circuit. (05 Marks)

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