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**Sixth Semester B.E. Degree Examination, Dec.2018/Jan.2019**  
**Automotive Electrical and Electronic Systems**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions, selecting at least TWO questions from each part.**  
**2. Write neat diagrams wherever applicable.**

**PART - A**

- 1 a. Explain in detail the construction, working principle, merits and demerits of a lead – acid battery. (10 Marks)
- b. Explain any one method of charging a lead acid battery. (04 Marks)
- c. Write a note on : i) Effect of temperature on specific gravity of electrolyte and ii) Sulfation in battery. (06 Marks)
- 2 a. What is 'Armature reaction'? How armature reaction is countered in generator? (08 Marks)
- b. Sketch and explain the working principle of a voltage regulator. (08 Marks)
- c. Write a note on AC generator. (04 Marks)
- 3 a. Explain the construction and working of a starter motor, with a neat diagram. (08 Marks)
- b. Write about the V – I characteristics of series wound and parallel wound motors. (06 Marks)
- c. Explain the working of a 'Bendix drive', with a neat sketch. (06 Marks)
- 4 a. With a neat circuit diagram, explain the working of any electronic ignition system. (10 Marks)
- b. How the spark timing is controlled electronically? Explain the salient parameters. (10 Marks)

**PART - B**

- 5 a. Compare earth return and insulated return systems. (04 Marks)
- b. Sketch and explain the construction of a sealed beam head lamp. Mention its merits. (06 Marks)
- c. Sketch and explain : i) Electrical fuel pump ii) Electric horn. (10 Marks)
- 6 a. Explain the concept of Automobile Air conditioning system, with a block diagram. (08 Marks)
- b. Sketch and explain any one type of car heating system. (06 Marks)
- c. Write a note on Seat heaters. (06 Marks)
- 7 a. With a block diagram, explain combined ignition and fuel management system. (08 Marks)
- b. What is 'Complete Vehicle Control System'? Explain the sensors used in CVCS. (08 Marks)
- c. Write a note on Hybrid vehicles. (04 Marks)
- 8 a. What is 'ABS'? Explain the concept, with a neat sketch. (08 Marks)
- b. Describe 'Active Suspension System' used in the modern automobile. (06 Marks)
- c. Write a note on :  
i) Traction control ii) Air bags. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.