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12EC117

**M.Tech. Degree Examination, June / July 2014**  
**Automotive Electronics**

Time: 3 hrs.

Max. Marks:100

**Note: Answer any FIVE full questions.**

- 1
  - a. What do you mean by Ignition in an IC engine? What are the components of an ignition system and explain each of them? (12 Marks)
  - b. Explain the 4 stroke cycle, with neat diagram. (08 Marks)
- 2
  - a. Briefly explain the working of a spark plug with a neat diagram. (05 Marks)
  - b. Discuss the effect of air – fuel ratio on performance of an SI engine. (10 Marks)
  - c. Explain an optical method of measuring engine speed. (05 Marks)
- 3
  - a. What is Hall Effect? Explain a position sensor using principle of Hall Effect. Compare it with magnetic reluctance position sensor. (10 Marks)
  - b. With a neat diagram, explain the disk breaking system of an automobile. (05 Marks)
  - c. Explain the structure and working principle of a MAP sensor. (05 Marks)
- 4
  - a. What is a catalytic converter and explain the desired functions of a catalytic converter. (04 Marks)
  - b. Explain the following engine performance terms :  
 i) Power    ii) BSFC    iii) Torque    iv) Volumetric efficiency. (08 Marks)
  - c. Write a note on optical crankshaft position sensor. (08 Marks)
- 5
  - a. Briefly explain the the electronic fuel control system. (10 Marks)
  - b. What is speed – density method? Explain. (10 Marks)
- 6
  - a. Give an over view of automotive instrumentation with an example. (10 Marks)
  - b. Explain the micro controller based cruise control, with a suitable block diagram. (10 Marks)
- 7
  - a. Explain any 2 conventional methods of engine diagnostics. What are its limitations? (10 Marks)
  - b. Explain : i) Dead lock reckoning navigation    ii) Sign post navigation. (10 Marks)
- 8
  - a. Write a short note on trip information computer. (10 Marks)
  - b. Explain : i) Low tire pressure warning system    ii) Anticollision warning system. (10 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.