



VII SEMESTER B.TECH. (MECHATRONICS ENGINEERING)

END SEMESTER EXAMINATIONS, NOVEMBER 2018

SUBJECT: AUTOTRONICS [MTE 4003]

(29/11/2018)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.

- 1A. Discuss the effect of spark timing on the engine performance with a graph of performance variable versus the spark timing. 3
- 1B. Differentiate between open loop control and closed loop lambda control of fuel injection. 3
- 1C. Identify the components numbered 8,9,10,11 of Bosch L-jetronic injection system shown in Fig.Q1C and mention their role in the injection system. 4

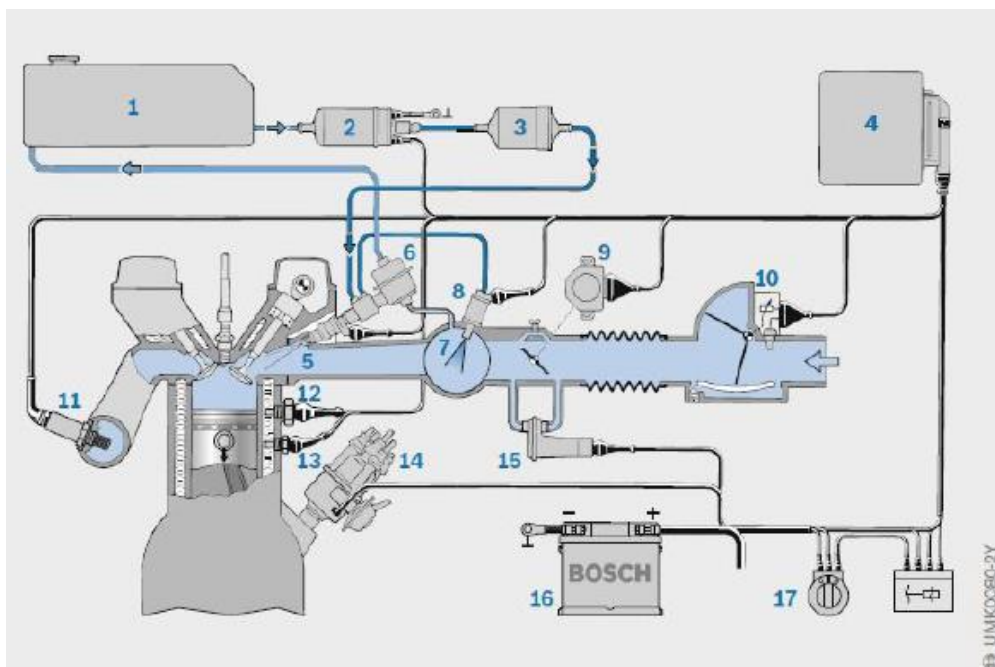


Figure Q1C

- 2A.** Explain the working of manifold absolute pressure sensor (MAP) with the relevant electrical circuit and schematic diagram. **3**
- 2B.** Plan the control flow for the engine start, warm-up and idle speed operation. **3**
- 2C.** Differentiate between throttle body injection system and multi-point fuel injection system. **4**
- 3A.** A friend of yours is planning to buy a new car and his/her main concern is about parallel parking. Suggest and explain the working of a special feature in steering system that assists in parallel parking. **3**
- 3B.** Describe the CAN arbitration mechanism with suitable example. **3**
- 3C.** Explain the significance of each injection event with a graph of the different injection events in a CI engine **4**
- 4A.** Discuss the shortcomings of the conventional ignition system that could be overcome by electronic ignition system. Illustrate using a diagram for the conventional ignition system. **4**
- 4B.** Imagine that you were driving a car at a very high speed. Suddenly a child playing nearby ran in front of your car and you apply sudden brakes. In such a situation, which safety feature in your car avoids the collision between your car and the child. Discuss about the working of the identified safety feature. **6**
- 5A.** Suggest and explain the construction and working of an efficient process to reduce the NOX emissions in exhaust gas. **5**
- 5B.** What is the significance of Onboard diagnosis? Illustrate with suitable example in support of your answer. **5**