

# MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institution of Manipal University

# VII SEMESTER B.TECH. (MECHATRONICS ENGINEERING) END SEMESTER EXAMINATIONS, NOV 2017

## SUBJECT: AUTOTRONICS [MTE 4003]

### REVISED CREDIT SYSTEM (25/11/2017)

Time: 3 Hours

MAX. MARKS: 50

#### **Instructions to Candidates:**

- ✤ Answer ALL the questions.
- Draw relevant diagrams wherever necessary

1A.	Discuss about exhaust gas recirculation process and explain its significance.	04
1 <b>B</b> .	Explain the construction and working of knock sensor.	03
1C.	Imagine you are on a vacation to Alaska where you need to drive on snowy roads. Since it is snowy roads, vehicle has problems with stability while driving. Discuss about the stability issues and what feature in your vehicle helps in overcoming the problem.	03
2A.	Discuss the effect of spark timing on the engine's performance considering the hydrocarbon, NOX and fuel consumption. Illustrate using a graph.	04
2B.	Describe the MPFI configuration. Enumerate the advantages and disadvantages of MPFI system.	03
2C.	Describe the basic components in electronic engine management system.	03
3A.	To have better combustion quality and cater to the emission requirements fuel is injected at multiple instances in one cycle. Illustrate with a neat graph, the various injection events and explain the significance of each one of them.	05
3B.	What is the significance of active steering system? Discuss about the components of the active steering system.	05
4A.	Explain the construction and working along with electrical circuit of MAP sensor.	04

4 <b>B</b> .	Describe the digital engine control strategy in acceleration mode and deceleration mode.	04
4C.	What is the significance of OBD-II in automobiles?	02
5A.	Explain the construction and working of air flow sensor used in L-jetronic fuel injection system.	04
5B.	Discuss using timing diagram the CAN arbitration mechanism.	04
5C.	Enumerate the advantages of electronic ignition system over conventional/transistorized ignition systems.	02