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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL

A Constituent Institution of Manipal University

VII SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: ENGINE MANAGEMENT AND NAVIGATION SYSTEM [AAE 455]

REVISED CREDIT SYSTEM

(28/11/2016)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be suitable assumed.

- 1A.** Explain about the history of Engine Management System. **(02)**
- 1B.** Write the 5 differences between microprocessor and microcontroller with example. **(03)**
- 1C.** Sketch the pin diagram of 8085 microprocessor. Write the assembly programming for addition of two 16-bit numbers with carry. **(05)**
- 2A.** Write the difference between Mass Airflow Sensor and Vane Airflow Sensor. **(02)**
- 2B.** Explain the extended CAN protocol. **(03)**
- 2C.** What is meant by Solenoids and Duty-cycled Solenoid? Explain with neat circuit diagram. **(05)**
- 3A.** List and sketch the different types of Stratified engines based on its combustion systems. **(02)**
- 3B.** Explain the working principle of IDGPS. **(03)**
- 3C.** Draw a neat diagram of Gulp valve and Diverter valve used in engine management and explain the working principle of Diverter valve. **(05)**
- 4A.** How the Nitrous oxide injection increases the performance of engine? **(02)**
- 4B.** Derive the equation of vehicle position using 4 satellites. **(03)**
- 4C.** Explain the working of Toyota Lean-burn Engine with circuit diagram. **(05)**
- 5A.** What is Artificial Neural Network (ANN)? Explain the steps involved in perceptron's training algorithms. **(05)**
- 5B.** By considering an example of Code, explain each Alpha-numeric in the Diagnostic Trouble Code of Engine Management System. **(05)**

- 6A.** Draw a labelled Quarter car model with a Driver. **(02)**
- 6B.** What is GIS? Explain the GIS process. **(04)**
- 6C.** What is the need of GNSS-INS integration scheme? Sketch the block diagram of loosely coupled scheme and briefly explain it. **(04)**