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Total No. of Pages : 2

Total No. of Questions : 09

B.Tech.(AE) (Sem.-6)
AUTOMOTIVE ELECTRONICS
MICROCONTROLLERS

Subject Code : AE-310

Paper ID : [A0723]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students has to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students has to attempt any **TWO** questions.

SECTION-A

1. Write briefly :

- (a) *A p-n junction diode is similar to a fluid check valve.* Comment.
- (b) A memory chip has 8 data lines and 16 address lines. What is its size in bytes?
- (c) How does a microcontroller differ from a microprocessor?
- (d) What are the different engine operating modes that affect fuel control?
- (e) List the sensors which are used for measuring various engine parameters in digital engine control system.
- (f) How does electronic transmission controller determine the desired gear ratio?
- (g) What is the primary purpose of spark timing controls?
- (h) What do you understand by a fully-locked tyre?
- (i) How does a cruise control system control vehicle speed?
- (j) What is the function of timing light in automobile diagnostics?

SECTION-B

2. With the help of a block diagram, briefly discuss the architecture of an Intel 8051 microcontroller.
3. Discuss the working of any one type of engine crankshaft angular position sensor.
4. Discuss the input and output variables which are measured and controlled respectively in the electronic engine control system.
5. How does anti lock braking system assist a driver in decelerating the vehicle under poor braking conditions?
6. List the input and output parameters and discuss generic control strategy for electronic suspension control systems.

SECTION-C

7. With the help of a block diagram, discuss the components and working of an electronic fuel control system.
8. Discuss the functioning and advantages of an electronic steering control system. How is it different from traditional power steering systems?
9. What is a Hybrid Vehicle? What is difference between series hybrid vehicle and parallel hybrid vehicle? Discuss how power to the drive wheels of a hybrid vehicle is controlled and transmitted ?