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**M.E. / M.TECH. DEGREE EXAMINATIONS, MAY 2019**

Second Semester

**IC18201 – ELECTRONIC ENGINE MANAGEMENT SYSTEMS***(Internal Combustion Engineering)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

1. State any two applications of semiconductors in engine management system.
2. Classify transistors.
3. List any four variables sensed in engine control system.
4. What is the function of cam position sensor?
5. List out the components of electronic ignition system.
6. State the application of potentiometer.
7. What do you mean by MBT timing?
8. State the role of idle speed in gasoline injection.
9. What is Unit injector?
10. State the effect of retarding and advancing the injection timing in NO<sub>x</sub> emission of CI engine.

**PART B - (5 X16 = 80 Marks)**

11. (a) With a practical application, explain the role of integrated circuits and logic gates (16) in engine management system.

**(OR)**

- (b) (i) With a neat sketch explain any one analog to digital and digital to analog (8) converters.
- (ii) Discuss the application of micro controllers and amplifiers engine (8) management system.

12. (a) (i) Explain how the principles of Hall effect and Piezo electric effect are used in engine management system. (8)
- (ii) Explain the following with a neat sketch (8)
- (i) Hot wire Anemometer (ii) Throttle position sensor
- (OR)
- (b) Explain the following sensors with a neat sketch (16)
- (i) Knock sensor (ii) MAP sensor (iii) steering torque sensor (iv) Air mass flow sensor
13. (a) Compare and contrast the principle, construction and working of transistor controlled ignition system with that of capacitive discharge ignition. (16)
- (OR)
- (b) Discuss in detail about the concept of combined ignition and fuel management systems. (16)
14. (a) Explain the Gasoline direct injection system of SI engine. Also compare its advantages over other injection systems of SI engine. (16)
- (OR)
- (b) Discuss the role of Electronic control unit in gasoline injection system of SI engine. Also state the various types of input parameters to the Unit and explain the methodology adopted to process the input. (16)
15. (a) In a Heat release rate diagram represent Pilot injection and main injection. Describe the necessity of pilot injection in CI engine combustion. (16)
- (OR)
- (b) Discuss the operation of CRDI system with a block diagram clearly showing all sensors. Also explain the characteristics of CRDI system. (16)