Reg. No. : | | | | | | | | | | | |

R 3490

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Seventh Semester

Mechatronics Engineering

MH 1402 — AUTOMOTIVE ELECTRONICS

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the Euro III standards for emission from automobiles.

2. Why a D.C series motor is preferred for the starting system of automobiles.

3. Give the reasons for using multi cylinder engines rather than using a larger single cylinder of similar cubic capacity.

4. What is the necessity of ignition advance in petrol engines?

5. Why the air flow into the engine is to be monitored for an electronic engine management system?

6. Differentiate throttle body and MPFL injection systems.

7. What is closed loop control in engine management?

8. Why acceleration enrichment of fuel is needed?

9. What is meant by active suspension system?

10. What is the purpose of Adaptive Cruise Control?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the charging system of a modern passenger car with special reference to the battery, alternator and voltage regulation.

Or

(b) Suggest a suitable starter motor for a passenger car. Justify your selection. Explain the working of the starting system.

12. (a) Sketch the circuits for a contact breaker less ignition system for a multicylinder petrol engine. How you can dispense the distributor also in this case?

Or

(b) Explain the working of a constant venturi carburettor used in a 4 stroke 4 cylinder petrol engine and explain the various circuits of the carburettor to cater the varying engine operating conditions.

13. (a) (i) With the aid of a sketch explain the constructional details and working principle of a typical mass air flow sensor used in electronic engine management system. (8)

(ii) Explain a typical usage of solenoid in digital engine control. (8)

Or

(b) Explain the constructional details and theory of operation of an oxygen sensor used in automobiles. Further explain how the output from this sensor is utilized in efficient engine management

14. (a) List out the different mode of operation of an S.I engine used in a car. Explain how this varying operating conditions are met with in an electronic engine management system.

Or

(b) Explain CAN protocol and how this is best suited for automobile applications. Further explain the engine diagnostic system used in modern automobiles.

15. (a) With the aid of block diagram explain traction control systems and cruise control systems for a vehicle.

Or

(b) Write notes on the following :

(i) Antilock braking system

(ii) Digital display of dash board instruments

(iii) Window winding mechanism for cars.
