Register Number: ……..

B.E DEGREE EXAMINATIONS: APRIL/MAY 2014

(Regulation 2009)

Seventh Semester

MECHATRONICS ENGINEERING

MCT119: Automotive Electronics

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Strictest emission norms are initiated in the world first
   a) London b) Tokyo
   c) New Delhi d) California
2. Minimum engine starting speed of an engine is
   a) 100 RPM b) 90RPM
   c) 75 RPM d) 80 RPM
3. The firing order for an in-line four cylinder I.C. engine is
   a) 1-2-3-4 b) 1-3-4-2
   c) 2-1-4-3 d) 3-2-4-1
4. The main function of intake manifold is that it
   a) promotes the mixture of air and fuel b) reduces intake noise
   c) cools the intake air to a suitable temperature d) distributes intake air equally to the cylinders
5. The information provided by the oxygen (O_2) sensor to the feedback control system is about the
   a) air-fuel ratio b) air temperature
   c) exhaust gas volume d) air flow speed
6. Hybrid stepper motor is a combination of
   a) AC and DC Motor b) Induction motor
   c) D.C Shunt and Series Motor d) variable reluctance and PM motor
7. ECU is an electronics injection system used for
   a) Meeting only certain operating conditions b) Calculating the appropriate injection timing
   c) Closing the injection valve d) Calculating engine timing cycle
8. CAN Protocol Developed by
   a) Ford b) Tata Motors

   c) Bosch d) Rockwell Automation
9. The condition that causes vapour locking in a brake system is_____
   a) overheating of the fluid due to frequent brake application b) overcooling of the brakes during high speed driving
   c) keeping the vehicle without use for an extended period d) an excessively high engine speed on a downhill road
10. Air-bag material made from
    a) Rubber b) Cotton fabric
    c) thermo plastic d) Nylon fabric

PART B (10 x 2 = 20 Marks)

11. What is meant by Euro norms?
12. State the working principle of charging system.
13. List the factors to be considered while designing ignition system.
14. Distinguish between throttle body and MPFI system
15. What is the range of air - fuel ratio for an engine at the time of engine crank and engine warm up modes?
16. Write the advantages of exhaust gas recirculation system.
17. What is ECU?
18. Write the format of CAN standards.
19. What is the purpose of cruise control system?
20. Which sensor and actuator used for climate control system in a car?

PART C (5 x 14 = 70 Marks)

21. a) Discuss in detail about Euro I, Euro II, Euro III, Euro IV and Euro V with respect to Engine development.

(OR)

b) Explain in detail about starter motor and starter circuit with necessary diagrams.

22. a) Write the Working principle of four Stroke Petrol engine with neat diagram.

(OR)

b) i) Explain about programmable ignition system with neat sketch. (7)

   ii) Discuss in detail about MPFI with neat diagram (7)

23. a) i) Write short note on : Knock Sensor (7)

ii) Write short note on : Manifold Absolute Pressure Sensor (7)

(OR)

b) Discuss the working principle of oxygen sensor and coolant temperature sensor

24. a) Explain with a neat block diagram, the various components of a typical engine management system.

(OR)

b) Discuss in detail about various diagnostics system in modern automobiles.

25. a) Explain the elements present in traction control system and explain how road safety is achieved.

(OR)

b) i) Explain the role of MEMS in airbag system. (7)

ii) Explain about centralized door locking system with neat diagram. (7)

****