KUMARAGURU
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Register Number: ……..

B.E DEGREE EXAMINATIONS: NOV 2015

(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. The purpose of a rectifier in an alternator is to

   A. change AC to DC voltage B. control alternator output current

   C. change DC to AC voltage D. control alternator output current

2. In alternator the magnet field is produced in the

   A. rotor B. stator C. frame D. regulator

3. Cruising conditions require the ignition timing to be

   A. retarded B. reversed C. allocated D. advanced

4. The type of petrol injection system which makes use of a single injector that sprays fuel towards a throttle is termed a

   A. single point system B. rotary system

   C. multi-point system D. in-line system

5. The function of lambda sensor fitted in an exhaust system is to monitor

   A. carbon monoxide B. oxides of Nitrogen C. carbon dioxide D. oxygen

6. What does an actuator do?

   A. it is an input device for an engine control system

   B. it provides a mathematical model for an engine

   C. it causes an action to be performed in response to an electrical signal

   D. it indicates the results of a measurement

7. What is the primary purpose of spark timing controls

A. to maximize fuel economy

B. to minimize exhaust emissions

C. to optimize catalytic converter efficiency

D. to optimize some aspects of engine performance (eg., torque)

8. An EGR system usually operates during:

A. cold starts B. high vacuum conditions

C. fast accelerations D. engine decelerations

9. A system that improves the grip of driven wheels when accelerating is known as:

A. ABS B. ECU C. TCR D. ECAT

10. Following a frontal impact, the time taken to fully inflate an airbag will be approximately

A. 10 ms B. 20 ms C. 30 ms D. 40 ms

Answer All Questions:-

PART B (10 x 2 = 20 Marks)

11. List any two requirements of charging system.

12. Why DC series motor is preferred for the starting system of automobiles?

13. Write any four factors to design an ignition system.

14. What are the advantages of electronic injection?

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

16. Name the components of electronic fuel injector.

17. Define engine management.

18. What is in vehicle network?

19. List the advantages that can be claimed for a good traction control system.

20. What is intersection zoom in navigation system?

PART C (5 x 14 = 70 Marks)

21. a) (i) Discuss about various emission norms used in automobiles. (7)

(ii) Illustrate the working of inertia starter with neat sketch. (7)

(OR)

b) (i) Describe the working principle of altenator in charging system with neat sketch. (7)

(ii) Draw and explain the starter system circuits used in automobiles. (7)

22. a) (i) Explain in detail about electronic ignition system with neat diagram. (10)

(ii) Differentiate between the throttle body and multi point fuel injection systems. (4)

(OR)

b) (i) Discuss about the construction and working of carburetor with neat sketch. (10)

(ii) Differentiate between the programmed ignition and direct ignition systems. (4)

23. a) (i) Explain the working of any one mass air flow sensor with neat sketch. (7)

(ii) How the thermistor acts as a coolant temperature sensor? Explain in detail. (7)

(OR)

b) (i) Explain in detail about crankshaft position sensor with neat diagram. (7)

(ii) Explain the working principle of EGO sensor with neat sketch. (7)

24. a) (i) Draw the block diagram of an electronic engine management system and explain the controlling function of it. (10)

(ii) Write short notes on various control modes for fuel control. (4)

(OR)

b) Discuss in detail about the use, format and advantages of CAN standard.

25. a) Explain the construction and operation of the ABS with neat sketches.

(OR)

b) Describe the operation, components and circuits of airbag system with neat sketch.

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