

8. The main ECU 'input' parameters for calculating ignition timing and injector duration are:
- (a) Speed and temperature (b) Speed and load
(c) Pressure and temperature (d) Pressure and load
9. When the wheel locks during the braking of a vehicle fitted with ABS, the modulator action will be:
- (a) release, hold, build-up (b) hold, build-up, release
(c) build-up, release, hold (d) none of these
10. Which of the following would be regarded as an active safety feature?
- (a) good road holding (b) side airbags (c) seat-belt tensioner (d) all of these

PART B (10 x 2= 20 Marks)

11. What is meant by constant charging voltage technique? State the accepted charging voltage for a 12V battery?
12. What is meant by rectifier circuit in the charging system.
13. State four advantages of a pre-engaged starter when compared with an inertia type.
14. Make a sketch to show the speed torque characteristics of a series, shunt and compound motor.
15. What is Hall effect? Mention any two applications of Hall Effect sensor.
16. Briefly explain the sensor which is used for sensing the engine knocking.
17. Draw the general block diagram of fuel control system.
18. List the variables to be defined for transmitting data using Multiplex data bus.
19. What is the need for Traction control in automobiles?
20. Mention the objectives of ECAT.

PART C (5 x 14 = 70 Marks)

21. a) Explain the design and working of the charging system with the circuit diagram. (7)
- (OR)**
- b) Explain the principle of operation of starter motor and starter circuits in the automobiles. (7)
22. a) (i) Explain the working of carburetor with a neat sketch. (7)
- (ii) Explain the operation of direct ignition system with a neat sketch. (7)
- (OR)**
- b) (i) Describe the sequential fuel injection system and how does it differ from simultaneous fuel injection system. (4)

(ii) Explain the electronic ignition system with a neat sketch. (10)

23. a) Draw the strain gauge MAP sensor and explain the air flow rate measurement using MAP sensor with the help of Wheatstone bridge circuit.

(OR)

b) Describe the following: (i) Hall effect sensors (4)

(ii) EGO sensors (5)

(iii) EGR actuators (5)

24. a) Explain the different types of ECU's used in the engine management system with the help of block diagrams.

(OR)

b) Explain about CAN standards and the format used for CAN standards in the automobiles.

25. a) Explain in detail about the components and working of Anti- lock braking system in automobiles.

(OR)

b) Explain in detail the working of air bags and centralized door lock system in automobiles.
