

Reg. No.

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B. E / B. TECH.DEGREE EXAMINATION, MAY 2023

Eighth Semester

AE18012 – ENGINE AND VEHICLE MANAGEMENT SYSTEMS*(Automobile Engineering)***(Regulation 2018)****TIME:3 HOURS****MAX. MARKS: 100**

- CO1** Discuss the fundamentals of control strategies applied in engines and automotive components.
- CO2** Explore the construction and working principle of automotive sensors
- CO3** Discuss and compare the fuel control techniques featured in spark ignition engines
- CO4** Discuss and compare the fuel control techniques featured in compression ignition engines.
- CO5** Explore the control system employed in comfort, security and safety of vehicle.

PART- A(10x2=20Marks)
(Answer all Questions)

	CO	RBT LEVEL
1. Figuratively represent fuzzy estimator.	1	2
2. List any four significant aspects of electronics used for gasoline engine management system.	1	1
3. Give a list of the various types of sensors used in the MPFI petrol engine.	2	1
4. Can a position sensor be used as speed sensor? Justify.	2	2
5. Draw a graph depicting the conversion efficiency of a three way catalytic converter for treating CO, HC and NOx.	3	3
6. What is the need for cold start and warm up phases in fuel injection system?	3	2
7. Differentiate between low and high pressure EGR systems.	4	3
8. Which sensor signal priority is used for fuel injection timing and quantity control for the CRDI engines?	4	2
9. Brief the need for supplementary restraint system.	5	2
10. List the various Vehicle security systems.	5	1

PART- B (5x 14=70Marks)

	Marks	CO	RBT LEVEL
11. (a) Discuss about the important blocks and architecture of 8085 microprocessor.	(14)	1	2

(OR)

(b) Illustrate with an example of adaptive and fuzzy logic control techniques used for an automotive systems control. (14) 1 2

12. (a) Explain the construction and working of a sensor based on piezo electric effect and its application in a car. (14) 2 2

(OR)

(b) Discuss the following sensor with neat sketch.

(i) Knock Sensor (7) 2 2

(ii) MAP sensor (7) 2 2

13. (a) With a neat sketch explain the construction and operation of three way catalytic converter. (14) 3 2

(OR)

(b) Briefly explain, how the ignition control system works in an engine management system (14) 3 2

14. (a) Discuss in detail the various components of an electronically controlled common rail fuel injection system with a neat sketch. (14) 4 2

(OR)

(b) Explain the electronic injector current and fuel flow response waveform. Also, illustrate the operation-of low pressure EGR systems for emissions control techniques. (14) 4 2

15. (a) Discuss the need and working of a Antilock braking system with a neat sketch. (14) 5 2

(OR)

(b) Explain the construction and working principles of an air bag with electronic activating system. (14) 5 2

PART- C (1x 10=10Marks)

(Q.No.16 is compulsory)

Marks	CO	RBT LEVEL
(10)	3	3

16. Figurative the electronically controlled gasoline fuel-injected system with lambda closed-loop control and explicate the working of the system.
