



# CBCS SCHEME

15MT81

## Eighth Semester B.E. Degree Examination, Aug./Sept.2020 Automotive Electronics and Hybrid Vehicles

Time: 3 hrs.

Max. Marks: 80

- Note: i) For Regular Students: Answer any FIVE full questions irrespective of modules.  
ii) For Arrear Students : Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Explain the different strokes for a four stroke of SI engine with suitable diagram. (08 Marks)  
b. What are the drive trains? With schematic diagram, explain the planetary gear system. (08 Marks)
- 2 a. Explain with a neat sketch working of spark plug with high voltage circulate. (08 Marks)  
b. Write short notes on the following:  
(i) Air/fuel ratio (ii) Starting system  
(iii) Steering system (iv) Ignition system (08 Marks)

### Module-2

- 3 a. Write the short note on following sensors:  
(i) Exhaust oxygen sensors (ii) Knock sensors (08 Marks)  
b. What is Hall effect? Explain the working of position sensors using Hall effect. (08 Marks)
- 4 a. Define Actuator. Explain metering Actuators. (08 Marks)  
b. With a neat sketch, explain EGR system. (08 Marks)

### Module-3

- 5 a. Explain multirate sapling. (08 Marks)  
b. Explain the measurement of speed, fuel, pressure and its signal conversions. (08 Marks)
- 6 a. Explain with a neat sketch remote keyless entry for car. (08 Marks)  
b. With a neat sketch, explain GPS system. (08 Marks)

### Module-4

- 7 a. Write short notes on : (i) Onboard diagnostics (ii) Off-board diagnostics (08 Marks)  
b. With a neat sketch, explain ABS system. (08 Marks)
- 8 a. With a digital Cruise Control Configuration. Explain Cruise Electronics. (08 Marks)  
b. Write a note on Radar Warning System. (08 Marks)

### Module-5

- 9 a. With a neat sketch, explain series Hybrid and Parallel Hybrid Configuration of Hybrid Electrical Vehicles. (08 Marks)  
b. Briefly explain Electric Hybrid Vehicle Components. (08 Marks)
- 10 a. Explain vehicle simulation for analysis of Aerodynamic Properties. (08 Marks)  
b. Write the history of electrical vehicle and hybrid electrical vehicle. (08 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8=50, will be treated as malpractice.