

# CBCS SCHEME

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15MT81

## Eighth Semester B.E. Degree Examination, November 2020 Automobile Electronics and Hybrid Vehicles

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions irrespective of modules.*

### Module-1

- 1 a. With a neat sketch, explain the working of a four stroke Spark Ignition Engine (SI). (08 Marks)
- b. Write short notes on the following :  
i) Air fuel system ii) Starting system iii) Steering system iv) Ignition Timing. (08 Marks)
- 2 a. Explain the working of spark plug with high voltage circuit along with neat sketch. (08 Marks)
- b. What are drive trains? Explain planetary gear system with neat sketch. (08 Marks)

### Module-2

- 3 a. With neat sketch explain Exhaust gas Recirculation. (08 Marks)
- b. Write short notes on the following: i) Knock Sensor ii) Exhaust Oxygen sensor. (08 Marks)
- 4 a. What is Hall effect? Explain the working of Position sensor using Hall effect. (08 Marks)
- b. Define Actuator. Explain fuel metering Actuators. (08 Marks)

### Module-3

- 5 a. With a control segment configuration, explain the GPS structure. (10 Marks)
- b. Briefly explain multirate sampling. (06 Marks)
- 6 a. Explain sampling, measurement and signal conversion of speed, fuel and pressure parameters. (10 Marks)
- b. Briefly explain Remote keyless entry. (06 Marks)

### Module-4

- 7 a. Write short notes on : i) Onboard diagnostics ii) Off-board diagnostics. (10 Marks)
- b. Write short notes on Collision avoidance Radar warning system. (06 Marks)
- 8 a. With a digital cruise control configuration, explain cruise control electronics. (08 Marks)
- b. With a neat sketch, explain Anti-lock Braking System (ABS). (08 Marks)

### Module-5

- 9 a. Explain electric hybrid vehicle components. (08 Marks)
- b. Write the history of electric vehicle and hybrid electric vehicle. (08 Marks)
- 10 a. With a neat sketch, explain series hybrid vehicle and parallel hybrid configuration of hybrid electrical vehicles. (12 Marks)
- b. Describe vehicle simulation. (04 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.