



**B.E DEGREE EXAMINATIONS: NOV/DEC 2023**

(Regulation 2018)

Fifth Semester

**AUTOMOBILE ENGINEERING**

U18AUE0010:Auxiliary Vehicle Systems

**COURSE OUTCOMES**

- CO1:** Apply the concept of embedded systems for automotive applications.  
**CO2:** Outline the importance of stability and safety systems in automobiles.  
**CO3:** Interface automotive sensors and actuators with microcontrollers.  
**CO4:** Obtain an overview of vehicle systems.  
**CO5:** Review the telematics systems in modern vehicles.  
**CO6:** Recognize the various automotive security systems.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|---|-----|-------------------|
| 1. Infer the need for electronics in automobiles.                               | CO1 | [K <sub>1</sub> ] |
| 2. Illustrate the work of throttle position sensor.                             | CO1 | [K <sub>2</sub> ] |
| 3. Compare the Gas dine direct injection and multi point fuel injection.        | CO2 | [K <sub>2</sub> ] |
| 4. Define exhaust emission control technique in automotive.                     | CO2 | [K <sub>2</sub> ] |
| 5. Compare active and passive safety systems.                                   | CO3 | [K <sub>2</sub> ] |
| 6. List the passive safety systems used in automobile.                          | CO3 | [K <sub>1</sub> ] |
| 7. Illustrate the works of adaptive cruise control system in vehicles.          | CO4 | [K <sub>2</sub> ] |
| 8. Compare automatic transmission and continuous variable transmission systems. | CO4 | [K <sub>2</sub> ] |
| 9. Summarize the role of telematics in vehicles.                                | CO5 | [K <sub>2</sub> ] |
| 10. Interpret the operation of lane departure warning system.                   | CO6 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 16 = 80 Marks)**

**(Answer not more than 400 words)**

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|--|----|-----|-------------------|
| 11. Explain the works of oxygen sensor, vehicle speed sensor and detonation sensor with suitable diagrams. | 16 | CO1 | [K <sub>2</sub> ] |
| 12. Explain the construction and working of distributor less ignition system with                          | 16 | CO2 | [K <sub>2</sub> ] |

suitable diagram.

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|-----|---|----|-----|-------------------|
| 13. | Illustrate the construction and working of antilock braking system with suitable sketch.                | 16 | CO3 | [K <sub>2</sub> ] |
| 14. | Demonstrate the construction and working of dual-clutch transmission system with suitable sketch.       | 16 | CO4 | [K <sub>2</sub> ] |
| 15. | Explain the construction and working of Heating, Ventilation and Air Conditioning system in automotive. | 16 | CO5 | [K <sub>2</sub> ] |
| 16. | Discuss any two driver assistance system used in automotive sector with neat diagrams.                  | 16 | CO6 | [K <sub>2</sub> ] |

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