



## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Eighth Semester, B.E. - Automobile Engineering**

**Semester End Examination;  
Automotive Embedded System**

Time: 3 hrs

Max. Marks: 100

### Course Outcomes

The Students will be able to:

CO1: Know the safety electronics and active 4 passive safety s/m's.

CO2: Know the systems and design of steer by wire, brake by wire, gas by wire.

CO3: Understand the bas sensor types of sensor.

CO4: Analyze the electronic ignition s/m'.

CO5: The automotive embedded s/m microcontroller based s/m.

**Note:** I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
1 a.	Abbreviate the following: ABS, ESP, TCS, and ACC.	2	L1	CO1	PO1
b.	What are the challenges faced by implementing X-wire system?	2	L2	CO2	PO1
c.	What is the purpose of using altitude sensor?	2	L2	CO3	PO1
d.	Why do we need electronic ignition system?	2	L1	CO4	PO1
e.	What is the benefit of using engine management system?	2	L1	CO5	PO1
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
2 a.	Explain the construction and working of Anti-Lock Braking System with suitable sketch.	9	L2	CO1	PO1,2
b.	Explain the following: i) Car audio system ii) Navigation system iii) Door control system	9	L3	CO1	PO1,6
c.	With block diagram, explain gasoline engine management system.	9	L2	CO1	PO2
<b>UNIT - II</b>		<b>18</b>			
3 a.	With suitable sketch, explain the construction and working of brake by wire system.	9	L3	CO2	PO1,2
b.	Explain the construction and working of Steer by wire system with help of sketch.	9	L2	CO2	PO1,2
c.	Explain the benefit, future and limitations of Drive by wire system.	9	L3	CO2	PO1,8

**UNIT - III****18**

- 4 a. With a neat sketch, explain the construction and working of mass air flow sensor. 9 L2 CO3 PO1
- b. Explain the construction and working of vehicle speed sensor with neat sketch. 9 L3 CO3 PO1,7
- c. Explain the construction and working of oxygen sensor with neat sketch. 9 L2 CO3 PO2

**UNIT - IV****18**

- 5 a. Explain the working of digital engine control system with suitable block diagram. 9 L3 CO4 PO1,2
- b. Briefly explain open loop and closed loop system with suitable sketches. 9 L2 CO4 PO8
- c. Explain the following:
- i) Solid state ignition system 9 L3 CO4 PO2
- ii) Exhaust emission engineering
- iii) Benefit of electronic ignition system

**UNIT - V****18**

- 6 a. Explain briefly about Automotive embedded system with example. 9 L3 CO5 PO1,2
- b. Explain architect of PLC micro controller with neat sketch. 9 L2 CO5 PO1,9
- c. Explain the following advance embedded systems:
- i) GLS 9 L3 CO5 PO2
- ii) GPSS
- iii) GMS

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