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

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Automobile Engineering

Semester End Examination; August - 2023

Automotive Electrical and Autotronics

Time: 3 hrs

Max. Marks: 100

Course Outcomes

The Students will be able to:

CO1: Explain the evolution of electrical systems, different accessories, construction, working principle and troubleshooting of battery is used for automotive application.

CO2: Explain the construction, working principle and identify troubles encountered in starting and charging systems.

CO3: Explain the working principle of lighting system and accessories.

CO4: Explain the working principle of various types of sensors and actuators used in automobile.

CO5: Understand the application of microcontroller in automobile.

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
I : PART - A		10			
1 a.	How do lead acid batteries work?	2	L1	CO4	PO1,2
b.	What is the working principle of charging alternator?	2	L2	CO2	PO1,2
c.	What are the advantages of lighting system in automobile?	2	L2	CO3	PO1,2
d.	What are the different types of automobile scanners?	2	L2	CO4	PO1
e.	What is microcontroller in automobile?	2	L2	CO5	PO1
II : PART - B		90			
UNIT - I		18			
2 a.	Explain with neat sketch, the working principle of lead acid battery.	9	L3	CO1	PO2
b.	Discuss briefly the effect of temperature on battery performance and electrolyte gravity.	9	L2,3	CO1	PO2
c.	What are the methods of battery charging? Discuss briefly.	9	L1,3	CO1	PO3,4
UNIT - II		18			
3 a.	Describe with the help of illustration, the principle of a D C generator of an automobile.	9	L2	CO2	PO3,4
b.	With a neat circuit diagram, explain the working of current and voltage regulator system.	9	L2	CO2	PO2
c.	What is the principle of bendix drive? Explain with neat sketch, the working principle of the same.	9	L3	CO2	PO2

Contd...2

UNIT - III		18
4 a.	Describe with the help of a neat sketch the constructional details of head lights of conventional type.	9 L2 CO3 PO1
b.	What is head light dazzle? Discuss the various causes of dazzle?	9 L3 CO3 PO2,3
c.	With the help of neat circuit diagram, explain the working principle of thermostatic type fuel gauge.	9 L2 CO3 PO1
UNIT - IV		18
5 a.	With a neat sketch, explain the working principle of mass air flow sensor.	9 L2 CO4 PO1,1
b.	What is the function of temperature sensor in EFI System? Explain briefly with a sketch.	9 L2 CO4 PO1,3
c.	What is an Actuator? Discuss the different types of Actuators used in an automobile.	9 L3 CO4 PO2,3
UNIT - V		18
6 a.	Discuss briefly the architecture of micro controller used in automobiles.	9 L2 CO5 PO3
b.	What is the principle of antilock braking system? Discuss briefly the working principle of the same.	9 L2 CO5 PO2
c.	Explain with neat sketch the gasoline injection system.	9 L2 CO5 PO3

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