Register Number:……..

KUMARAGURU
college of technology
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B.E DEGREE EXAMINATIONS: APRIL /MAY 2024

(Regulation 2018)

Sixth Semester

ELECTRICAL AND ELECTRONICS ENGINEERING

U18EEE0009: Automotive Electronics

COURSE OUTCOMES

CO1: Gain the knowledge on electrical and electronics systems available in modern automobiles.

CO2: Understand the role of Electronics Control Unit in modern automobiles.

CO3: Outline the various stages of Integrated development environment to design an embedded system.

CO4: Understand the internals of various embedded system design to ensure occupant's safety and comfort.

CO5: Comprehend the fundamentals of vehicle communication protocols.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	What are the functions of a solenoid switch in Automobile?	CO1	[K_2]
2.	Define Cold Cranking Amps in Battery.	CO1	[K_2]
3.	Write the function of catalytic converter.	CO2	[K_2]
4.	What are the differences between BS-IV and BS-VI?	CO2	[K_2]
5.	Mention the functions of linker and loader.	CO3	[K2]
6.	What is Integrated Development Environment in Embedded system?	CO3	[K_1]
7.	List the functions of EGR.	CO4	[K_3]
8.	What is OBD?	CO4	[K_1]
9.	List the difference between I2C vs SPI.	CO5	[K_2]
10.	Mention the use of KWP2000 protocol.	CO5	[K_L]

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Explain the working of starting systems in Automobiles. What are the Primary Causes of Malfunction in Starting System ?.	8	CO1	[K_2]
	b)	Write a note on various charging techniques of a battery.	8	CO1	[K_2]
12.	a)	With neat diagram explain the operation of Capacitance Discharge electronic Ignition System and also mention its advantages.	8	CO2	[K_2]
	b)	Explain components and working of Antilock Braking System with relevant diagram.	8	CO2	[K_2]
13.	a)	What is IDE ? Explain IDE in microcontroller development cycle with neat diagram.	10	CO3	[K_2]
	b)	Discuss about host and target machine in Embedded system.	6	CO3	[K_2]
14.	a)	Explain the working of passive safety airbag system for passenger and driver with relevant block diagram	10	CO4	[K_2]
	b)	Describe the working of Manifold absolute pressure Sensor with relevant diagram.	6	CO4	[K_2]
15.	a)	What are the four different frames of CAN protocol ? Write the message format for all the frames.	8	CO5	[K_2]
	b)	Explain the structure and different topologies of Flex ray in automotive system. Draw the FlexRay Message Frame Format.	8	CO5	[K_2]
16.	a)	Explain the working of SPI bus with simple diagram.	8	CO5	[K_2]
	b)	Write a short notes about Throttle position sensor and Lambda sensor.	8	CO5	[K_2]

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