U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

May / June 2025 Semester End Main Examinations

Programme: B.E. **Semester: VIII**

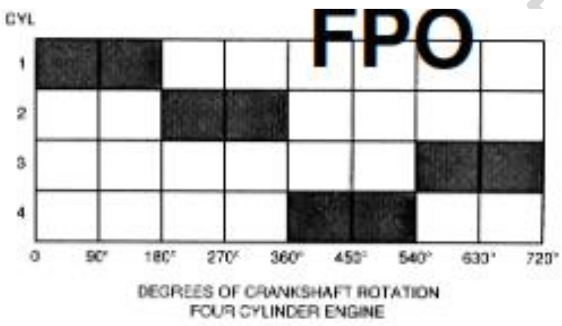
Branch: Institutional Elective **Duration: 3 hrs.**

Course Code: 23EC8OE3AE **Max Marks: 100**

Course: Automotive Electronics

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	*CO*	*PO*	Marks
1	a)		Analyse the following pulse diagram and comment on the operation of SI engine with suitable diagrams. 	*CO1*	*PO1*	**10**
	b)		Briefly explain the working of a spark plug with a neat diagram. Also explain how spark pulse is generated with help of circuit diagram.	*CO* 1	*PO1*	**10**
			OR			
2	a)		Analyse the different components of a conventional ignition system of an SI Engine along with their functional importance	*CO1*	*PO1*	**10**
	b)		Explain four stroke engine on the basis of following actions: i) Intake ii) Compression iii) Power iv) Exhaust	*CO* 1	*PO1*	**10**
			UNIT - II			
3	a)		Provide the Block Diagram of an electronic fuel control system. Analyze the operation using suitable diagrams	*CO2*	*PO2*	**10**
	b)		Define the following terms in the context of Engine Performance: (a) Power (b) BSFC (c) Torque (d) Volumetric Efficiency (d) Thermal Efficiency (e) Calibration	*CO1*	*PO1*	**10**
			OR			

	4	a)	Analyze the effects of the following on performance of automotive system: (a) Air/Fuel Ratio (b) Spark Timing (c) Exhaust Gas Recirculation (EGR)	***CO2***	***PO2***	**10**
		b)	Discuss the working of an electronic engine control system with the help of a Block Diagram.	***CO*** 1	***PO1***	**10**
			UNIT - III			
	5	a)	Where is the Hall Effect Sensor used? Explain with suitable diagrams the working of a Hall Effect Position Sensor.	***CO*** 1	***PO1***	**10**
		b)	What is an actuator? Explain working of an Fuel Injector Actuator in detail.	***CO*** 1	***PO1***	**10**
			OR			
	6	a)	What is an actuator? Explain working of an Ignition Actuator in detail.	***CO*** 1	***PO1***	**10**
		b)	What is the importance of the Throttle Angle Sensor? Explain with suitable diagrams the working of an Throttle Angle Sensor.	***CO*** 1	***PO1***	**10**
			UNIT - IV			
	7	a)	Analyze the mechanism of brake pressure modulation and analyze how it is put to work in an Antilock Braking System with the help of a Block Diagram.	***CO2***	***PO2***	**10**
		b)	List all the important features of the CAN Protocol. Illustrate the frame format and explain.	***CO2***	***PO2***	**10**
			OR			
	8	a)	Analyze the working of a typical cruise control system with a block diagram	***CO2***	***PO2***	**10**
		b)	List all the important features of the LIN Protocol. Illustrate the frame format and explain.	***CO2***	***PO2***	**10**
			UNIT - V			
	9	a)	Explain the concept and operation of a Series Hybrid Electric vehicle	***CO3***	***PO6***	**10**
		b)	Explain the construction and working principle of Lithium Ion Battery. State the advantages and disadvantages.	***CO3***	***PO6***	**10**
			OR			
	10	a)	Explain the concept and operation of a Parallel Hybrid Electric vehicle	***CO3***	***PO6***	**10**
		b)	List and briefly elaborate the various tests performed on automotive batteries.	***CO3***	***PO6***	**10**

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