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## Seventh Semester B.E. Degree Examination, Jan./Feb. 2023 Automotive Electrical and Electronic Systems

Time: 3 hrs. Max. Marks: 100

	N	ote: Answer any FIVE full questions, choosing ONE full question from each mod	lule.
Troic. This wer unit 11/ 2 juil questions, encouring extensions			
		Module-1	
1	a.	Explain the simple wiring diagram of the electrical system of an automobile,	
		sketch.	(10 Marks)
	b.	With diagram, explain the different electrical symbols used in automobile system.	
	C.	What are the types of cables used in wiring system? Explain briefly.	(04 Marks)
		On A	
2		OR Discuss the principle of operation of a lead acid battery with a neat sketch.	(10 Marks)
2	a. b.	List out the defects and remedies of batteries.	(04 Marks)
	c.	Explain working principle of zinc air battery with neat sketch.	(06 Marks)
	С.	Explain working principle of Zine air careery with new sites.	(,
		Module-2	
3	a.	Explain the construction and working of DC generation, with neat diagram.	(10 Marks)
	b.	With neat sketch, explain the construction and working of cutout relay.	(10 Marks)
		OR	
4	a.	Explain construction and working of starter motor with a neat sketch.	(10 Marks)
	b.	With neat sketch, explain construction and working principle of Bendix drive.	(10 Marks)
		Modulo 2	
5		Module-3 With neat diagram, explain battery ignition system of the four cylinder SI engine.	(08 Marks)
3	a. b.	Explain the principle of an electronic ignition system, with schematic diagram.	(08 Marks)
	c.	Compare Battery ignition system and Magneto ignition system.	(04 Marks)
	•	Somparison of the second of th	
		OR	
6		With neat sketch, explain the Head light aiming and levelling.	(04 Marks)
	b.	Explain the following with sketches:	
		i) Electrical Fuel Pump	
		ii) Wind Screen Wipers	
		iii) Electric Horn	(16 Manla)
		iv) Speedometer.	(16 Marks)
Module-4			
7	a.	With a block diagram explain, combined ignition and fuel control systems.	(08 Marks)
,	b.	Explain various timing devices used to adjust the timing of an engine.	(06 Marks)
	c.	Write a short note on:	
	20.00	(i) Hybrid Vehicles	
		(ii) Fuel Cells	(06 Marks)

## OR

- 8 a. Explain the following with sketches:
  - i) Antilock Braking Systems (ABS)

ii) Traction Control

b. Explain the importance of air bags and seat belt tensioners.

(12 Marks) (08 Marks)

## Module-5

- 9 a. Explain the components of electrical vehicle and the layout. (08 Marks)
  - b. Explain the construction and working of sodium sulphur battery for electric vehicles.

(08 Marks)

c. What are the merits and demerits of electric vehicles?

(04 Marks)

## OR

- 10 Explain the following:
  - a. Light sensors
  - b. Proximity sensors
  - c. Hall Effect sensors
  - d. Internet of Things (IoT)

(20 Marks)

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