

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI EXAMINATION – SUMMER 2025****Subject Code: 3160209****Date:20-05-2025****Subject Name: Automotive Electricals and Electronics****Time: 10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>MARKS</b>
<b>Q.1</b>	(a) Explain Circuit Breakers.	<b>03</b>
	(b) Draw any six electrical symbols and name them.	<b>04</b>
	(c) Explain the basic wiring Diagram layout of a four-wheeler electrical system.	<b>07</b>
<b>Q.2</b>	(a) Give the function of the following: (i) Relay circuit (ii) Switches (iii) Fuse.	<b>03</b>
	(b) Explain the utility of the parking brake indicator.	<b>04</b>
	(c) Describe the different battery capacity rating techniques.	<b>07</b>
	<b>OR</b>	
	(c) Describe the Various Methodologies for Battery Charging Techniques.	<b>07</b>
<b>Q.3</b>	(a) Explain the working Fuel Gauge.	<b>03</b>
	(b) Justify the need for an alternator.	<b>04</b>
	(c) Explain the spark plug with a neat sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Write Short notes on windscreens wipers.	<b>03</b>
	(b) Describe the Fuel metering sensor.	<b>04</b>
	(c) Explain the current voltage regulator for the charging system in detail with a neat sketch.	<b>07</b>
<b>Q.4</b>	(a) Explain the working of the odometer.	<b>03</b>
	(b) Describe throttle position sensors.	<b>04</b>
	(c) Draw the wiring diagram of the flashing-type side indicator and explain its working.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain the working of the oil pressure warning light.	<b>03</b>
	(b) Describe crank angle position sensors with a neat sketch.	<b>04</b>
	(c) Write a short note on the Electronic MPFI system used in the vehicle in detail.	<b>07</b>
<b>Q.5</b>	(a) Define the central locking system of a vehicle.	<b>03</b>
	(b) Explain the effect of interference suppression on vehicle engines.	<b>04</b>
	(c) Discuss cold starting devices: Glow plug & choke.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain the balancing type of fuel gauge.	<b>03</b>
	(b) Explain the spark advance mechanism and cam angle in the Ignition System.	<b>04</b>
	(c) Compare lead acid battery, dry battery and alkaline battery.	<b>07</b>

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Enrolment No./Seat No \_\_\_\_\_

## GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2024

**Subject Code:3160209**

**Date:15-05-2024**

**Subject Name:Automotive Electricals and Electronics**

**Time:10:30 AM TO 01:00 PM**

**Total Marks:70**

**Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		<b>Marks</b>
<b>Q.1</b>	(a) Explain the color codes used in wiring of vehicle electrical system. (b) Draw and explain the working of cut out relay used in vehicle. (c) Explain the construction and working of lead acid battery in detail.	03 04 07
<b>Q.2</b>	(a) Explain the battery gravimetric test. (b) Explain the working of over running clutch. (c) Draw and explain the construction and working of vehicle wiper system.	03 04 07
	<b>OR</b>	
	(c) Explain battery capacity rating methods in details.	07
<b>Q.3</b>	(a) Explain requirements of good starting system. (b) Explain four battery failures with their probable causes. (c) Explain the construction and working of bendix drive used for starter motor.	03 04 07
	<b>OR</b>	
<b>Q.3</b>	(a) Explain the various cable connector used in vehicles. (b) Explain the flywheel magneto charging system in short. (c) Explain the construction and working of axial sliding armature type starting device.	03 04 07
<b>Q.4</b>	(a) Enlist the requirements of good injection system. (b) Explain the wiring diagram of indicator lamp in four wheeler. (c) Explain the construction and working of head lamp with neat sketch.	03 04 07
	<b>OR</b>	
<b>Q.4</b>	(a) Explain the effect of reflector design in vehicle headlight in short. (b) Explain engine management system in brief. (c) Explain the throttle body injection and MPFI system in detail.	03 04 07
<b>Q.5</b>	(a) Enlist the Six dashboard indicator with their function. (b) Give the advantage and disadvantage of feedback carburetor system(FBC). (c) Explain the construction and working of oxygen sensor.	03 04 07
	<b>OR</b>	
<b>Q.5</b>	(a) Explain the function of glow plug in brief. (b) Explain the working principle of air horn. (c) Explain the working of oil level indicator with neat sketch.	03 04 07

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2023****Subject Code:3160209****Date:04-07-2023****Subject Name:Automotive Electricals and Electronics****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed

**MARKS**

<b>Q.1</b>	(a) Explain the need of charging circuit?	<b>03</b>
	(b) Discuss cable color code used for wiring in an Automobile	<b>04</b>
	(c) Explain basic wiring Diagram layout of Four wheeler electrical system with neat sketch.	<b>07</b>
<b>Q.2</b>	(a) Explain the different types of Automotive batteries.	<b>03</b>
	(b) Explain the working of cut out relay with neat sketch.	<b>04</b>
	(c) Explain Designation and Rating of Batteries.	<b>07</b>
	<b>OR</b>	
	(c) Write Short Note on Power windows and Side Indicator Lamp with circuit diagram.	<b>07</b>
<b>Q.3</b>	(a) Explain working Fuel Gauge.	<b>03</b>
	(b) Discuss Glow plug and choke.	<b>04</b>
	(c) Write short note on Bendix Drive Mechanism of Starting System of Automobile.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Explain Multi point Fuel Injection system.	<b>03</b>
	(b) Explain the hydrometer test for battery.	<b>04</b>
	(c) Write short note on Battery or Coil ignition system with neat sketch.	<b>07</b>
<b>Q.4</b>	(a) Explain Ignition Coil Tester.	<b>03</b>
	(b) Discuss vehicle speed sensor.	<b>04</b>
	(c) Explain the working of On Board Diagnostic Systems in Automobile and Also Compare OBD I with OBD II.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) Explain Series and Parallel circuit.	<b>03</b>
	(b) Discuss Knock/Detonation Sensors.	<b>04</b>
	(c) Explain different electrical system used in vehicle with neat sketch.	<b>07</b>
<b>Q.5</b>	(a) Explain the balancing type fuel gauge	<b>03</b>
	(b) Describe Crank Angle Position Sensors with Neat Sketch.	<b>04</b>
	(c) Enlist the various Components of Automotive relay and explain the working of Automotive relays.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Explain Oil pressure warning light.	<b>03</b>
	(b) Explain Capacitance discharge ignition system.	<b>04</b>
	(c) Discuss recent trend on automotive electronic engine management system.	<b>07</b>

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160209****Date:01/06/2022****Subject Name:Automotive Electricals and Electronics****Time:10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

**MARKS**

<b>Q.1</b>	<b>(a)</b> Draw and explain the working of simple circuit breaker in short.	<b>03</b>
	<b>(b)</b> Enlist the color codes and its indications used for wiring in vehicle.	<b>04</b>
	<b>(c)</b> Explain the constructional details of Lead acid battery in details with neat sketch.	<b>07</b>
<b>Q.2</b>	<b>(a)</b> Give the function of the following:	<b>03</b>
	(i)    Relay circuit	
	(ii)   Switches	
	(iii)  Fuse	
	<b>(b)</b> Explain the construction and working of cutout relay with sketch.	<b>04</b>
	<b>(c)</b> Explain the various methods of battery capacity rating.	<b>07</b>
	<b>OR</b>	
	<b>(c)</b> Enlist the various battery failures and their possible causes and remedies.	<b>07</b>
<b>Q.3</b>	<b>(a)</b> Explain working of glow plug and choke in brief.	<b>03</b>
	<b>(b)</b> Explain the construction and working of overrunning clutch.	<b>04</b>
	<b>(c)</b> Explain the Bendix drive type starting mechanism in details with neat sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	<b>(a)</b> Explain the hydrometer test for battery in short.	<b>03</b>
	<b>(b)</b> Explain any two battery charging methods in short.	<b>04</b>
	<b>(c)</b> Explain the current voltage regulator for charging system in detail with neat sketch.	<b>07</b>
<b>Q.4</b>	<b>(a)</b> Enlist any three faults in charging system and their possible causes.	<b>03</b>
	<b>(b)</b> Explain the working of the fog lamp in short.	<b>04</b>
	<b>(c)</b> Draw the wiring diagram of flashing type side indicator and explain its working.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	<b>(a)</b> Explain the working of oil pressure warning light.	<b>03</b>
	<b>(b)</b> Explain the working of On Board Diagnostic (OBD) in short.	<b>04</b>
	<b>(c)</b> Explain the Electronic MPFI system used in vehicle in detail.	<b>07</b>
<b>Q.5</b>	<b>(a)</b> Explain the working of balancing type fuel gauge.	<b>03</b>
	<b>(b)</b> Explain the effect of interference suppression on vehicle engine in short.	<b>04</b>
	<b>(c)</b> Explain the working principle of oxygen sensor used in vehicle with neat sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	<b>(a)</b> Explain the working of speedometer in short.	<b>03</b>
	<b>(b)</b> Explain any one type of throttle position sensor in brief.	<b>04</b>
	<b>(c)</b> Explain the construction and working of electric horn used in vehicles.	<b>07</b>

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