

**GUJARAT TECHNOLOGICAL UNIVERSITY**

**BE- SEMESTER-VI (NEW) EXAMINATION – WINTER 2024**

**Subject Code:3160209**

**Date:20-11-2024**

**Subject Name:Automotive Electricals and Electronics**

**Time:02:30 PM TO 05:00 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 function of alternator in a automobile.	<b>03</b>
(b) What do you understand by positive and negative earth return systems?	<b>04</b>
(c) Draw a neat wiring diagram of a four wheeler with all symbols.	<b>07</b>
<b>Q.2</b> (a) Write down function of a) Fuse, b) Switch and c) Relay.	<b>03</b>
(b) Explain working of spark plug with a diagram.	<b>04</b>
(c) Explain with a neat sketch battery ignition system and explain function of each component.	<b>07</b>
<b>OR</b>	
(c) Discuss various Battery Charging methods in detail.	<b>07</b>
<b>Q.3</b> (a) List advantages of alkaline battery over lead acid battery.	<b>03</b>
(b) Explain Battery Ratings.	<b>04</b>
(c) With a neat sketch, Explain working of a speedometer.	<b>07</b>
<b>OR</b>	
<b>Q.3</b> (a) Discuss the role of rectifier in charging system.	<b>03</b>
(b) Define the following terms for starting motor a) Engine Brake away torque, b) Engine resisting torque, c) Motor Locked torque and e) Motor Driving Torque.	<b>04</b>
(c) What is the need of Cranking motor drive mechanism? Explain working of Over running Clutch with a neat diagram.	<b>07</b>
<b>Q.4</b> (a) A Starting motor is to be selected for a four stroke 1.2 ltr Diesel engine, list out the factors affecting the motor selection.	<b>03</b>
(b) Explain Spark Advance mechanism.	<b>04</b>
(c) Draw a neat diagram of lighting system of a automobile.	<b>07</b>
<b>OR</b>	
<b>Q.4</b> (a) Write function of a) Cable connectors, b) Circuit breakers and c) Wiring Harness.	<b>03</b>
(b) With a neat diagram, Explain the working of Oil pressure Gauge.	<b>04</b>
(c) Explain construction and working of Alternator with a neat diagram.	<b>07</b>
<b>Q.5</b> (a) Write a note on direction indicator used in automobile.	<b>03</b>
(b) Discuss On Board Diagnostic system used in modern automobiles.	<b>04</b>
(c) Explain Electronic fuel injection system, list out and also write functions of various sensors used in EFI.	<b>07</b>

**OR**

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|------------|------------|--|-----------|
| <b>Q.5</b> | <b>(a)</b> | List out various Electronic Dashboard instruments used in automobiles. | <b>03</b> |
|            | <b>(b)</b> | Write a note on Engine management System.                              | <b>04</b> |
|            | <b>(c)</b> | Explain with a neat diagram working of oxygen sensor.                  | <b>07</b> |

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