GUJARAT TECHNOLOGICAL UNIVERSITY

BE-6 SEMESTER – OLD PAPER – S22 TO W25 – QUESTION BANK

Subject Name & Code:

AUTOMOTIVE ELECTRICALS AND ELECTRONICS- 3160209

Unit 1: Automobile Electrical Systems

Repeated Questions:

1. Explain the basic wiring Diagram layout of a four-wheeler electrical system. (S25 - Q1c, 07 marks) | (S22 - Q1c, 07 marks) | (W24 - Q1c, 07 marks)
2. Enlist/Draw any six electrical symbols and name them. (S25 - Q1b, 04 marks) | (W22 - Q1b, 04 marks)
3. Give the function of the following: (i) Relay circuit (ii) Switches (iii) Fuse. (S25 - Q2a, 03 marks) | (S22 - Q2a, 03 marks) | (W24 - Q2a, 03 marks)
4. Explain central locking system of vehicle. (S25 - Q5a, 03 marks) | (W23 - Q2c, 07 marks) | (S22 - Q5a OR, 03 marks)
5. Explain/Discuss cable color code used for wiring in an Automobile. (S23 - Q1b, 04 marks) | (S22 - Q1b, 04 marks)

Other Important Questions:

1. How to generation of electric energy in automobile electrical systems? (W25 - Q1a, 03 marks)
2. Enlist different types of cables and cable connectors used in automobile electrical systems. (W25 - Q1b, 04 marks)
3. Explain basic wiring Diagram layout of Two and Four wheeler electrical system with neat sketch. (W25 - Q1c, 07 marks)
4. Draw a wiring diagram of 4 wheeler vehicle. (W22 - Q2b, 04 marks)
5. Explain the utility of the parking brake indicator. (S25 - Q2b, 04 marks)
6. Write short note on Power windows and Side Indicator Lamp with circuit diagram. (S23 - Q2 OR, 07 marks)
7. Write short note on Fog Lamps and Side Indicator Lamp with circuit diagram. (W22 - Q2 OR, 07 marks)
8. What is the need of charging circuit? (W22 - Q1a, 03 marks)
9. Draw and explain the working of simple circuit breaker in short. (S22 - Q1a, 03 marks)
10. Explain Circuit Breakers. (S25 - Q1a, 03 marks)
11. What do you understand by positive and negative earth return systems? (W24 - Q1b, 04 marks)
12. Write function of a) Cable connectors, b) Circuit breakers and c) Wiring Harness. (W24 - Q4 OR a, 03 marks)
13. Explain the various cable connector used in vehicles. (W23 OR - Q3a, 03 marks)
14. Enlist types of cables used in automobile electrical system with its color codes. (W22 - Q2a, 03 marks)

Unit 2: Batteries and Starting system

Repeated Questions:

1. Explain the various methods / different techniques of battery capacity rating. (W25 - Q2c, 07 marks) | (S25 - Q2c, 07 marks) | (S22 - Q2c, 07 marks) | (W23 OR - Q2c, 07 marks)
2. Explain Bendix drive / types of drive mechanism. (W23 - Q3c, 07 marks) | (S22 - Q3c, 07 marks) | (S23 - Q3c, 07 marks)
3. Explain working of glow plug and choke. (W22 - Q3a, 03 marks) | (S22 - Q3a, 03 marks) | (S23 - Q3b, 04 marks)
4. Compare lead acid battery, dry battery and alkaline battery. (S25 - Q5c, 07 marks) | (W22 - Q5c, 07 marks)
5. Explain the constructional details / working of Lead acid battery in details with neat sketch. (S23 - Q1c, 07 marks) | (S22 - Q1c, 07 marks)
6. Explain the gravimetric test for battery. (W25 - Q3b, 04 marks) | (S23 - Q3 OR b, 04 marks)
7. Explain the hydrometer test for battery. (S22 - Q3 OR a, 03 marks) | (S23 - Q3 OR b, 04 marks)
8. Explain the construction and working of overrunning clutch. (S22 - Q3b, 04 marks) | (W23 - Q3b, 04 marks)

Other Important Questions:

1. Give the reason of Battery failure in vehicles. (W25 - Q2a, 03 marks)
2. Difference between lead acid battery and alkaline battery. (W25 - Q2b, 04 marks)
3. Explain working principle of battery with neat sketch. (W22 - Q1c, 07 marks)
4. Explain the different types of Automotive batteries. (S23 - Q2a, 03 marks)
5. Explain Designation and Rating of Batteries. (S23 - Q2c, 07 marks)
6. List advantages of alkaline battery over lead acid battery. (W24 - Q3a, 03 marks)
7. Explain Battery Ratings. (W24 - Q3b, 04 marks)
8. Enlist the various battery failures and their possible causes and remedies. (S22 - Q2 OR c, 07 marks)
9. Explain four battery failures with their probable causes. (W23 - Q3b, 04 marks)
10. Explain requirements of good starting system. (W23 - Q3a, 03 marks)
11. 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. (W24 - Q3 OR b, 04 marks)
12. What is the need of Cranking motor drive mechanism? Explain working of Over running Clutch with a neat diagram. (W24 - Q3 OR c, 07 marks)
13. Explain the construction and working of axial sliding armature type starting device. (W23 OR - Q3c, 07 marks)
14. Explain cold starting devices: Glow plug & choke. (S25 - Q5c, 07 marks) | (W23 - Q5c, 07 marks)

Unit 3: Charging system and Lighting Auxiliaries

Repeated Questions:

1. Explain the working of cut out relay with neat sketch. (S23 - Q2b, 04 marks) | (W23 - Q1b, 04 marks) | (W22 - Q2c (part of), 07 marks)
2. Explain the current voltage regulator for the charging system in detail with a neat sketch. (S25 - Q3 OR c, 07 marks) | (S22 - Q3 OR c, 07 marks)
3. Explain the working of odometer. (S25 - Q4a, 03 marks) | (W22 - Q4a, 03 marks)
4. Draw the wiring diagram of the flashing-type side indicator and explain its working. (S25 - Q4c, 07 marks) | (S22 - Q4c, 07 marks)
5. Justify the need for an alternator. (S25 - Q3b, 04 marks) | (W23 - Q3 OR a, 03 marks)
6. Write Short notes on windscreen wipers. (S25 - Q3 OR a, 03 marks) | (W22 - Q4 OR a, 03 marks)
7. Explain the working of the fog lamp in short. (S22 - Q4b, 04 marks) | (W23 - Q1a, 03 marks)
8. Explain the working of the oil pressure warning light. (S25 - Q4 OR a, 03 marks) | (S22 - Q4 OR a, 03 marks)
9. Explain spark plug with neat sketch. (S25 - Q3c, 07 marks) | (W22 - Q3c, 07 marks) | (W24 - Q2b, 04 marks)

Other Important Questions:

1. Brief about A.C. & D.C. horns, wind tone horn and electronic horn. (W25 - Q3a, 03 marks)
2. Types of charging system. Explain any one in detail. (W25 - Q3c, 07 marks)
3. What is characteristics electronic regulator? (W25 - Q3 OR a, 03 marks)
4. Explain head lamp angle and its position. (W25 - Q3 OR b, 04 marks)
5. Explain flywheel magneto charging system and Alternator. (W25 - Q3 OR c, 07 marks)
6. Explain the working of cut out relay, voltage regulator and current regulator. (W22 - Q2c, 07 marks)
7. Explain working of solenoid used in electronic system. (W22 - Q3 OR a, 03 marks)
8. Write the difference between alternator and generator. (W22 - Q3 OR c, 07 marks)
9. Explain Bedix drive mechanisms. (W22 - Q3b, 04 marks)
10. Explain the flywheel magneto charging system in short. (W23 OR - Q3b, 04 marks)
11. Explain function of alternator in a automobile. (W24 - Q1a, 03 marks)
12. Discuss the role of rectifier in charging system. (W24 - Q3 OR a, 03 marks)
13. Explain the working of Oil pressure Gauge. (W24 - Q4 OR b, 04 marks)
14. Explain construction and working of Alternator with a neat diagram. (W24 - Q4 OR c, 07 marks)
15. Write short note on instrument panel lights and body interior lights. (W25 - Q4 OR b, 04 marks)
16. Enlist any three faults in charging system and their possible causes. (S22 - Q4a, 03 marks)
17. Give Principle of starting system. Write short note on starter motor and its circuits. (W22 - Q4 OR c, 07 marks)
18. Draw a neat diagram of lighting system of a automobile. (W24 - Q4c, 07 marks)
19. Write a note on direction indicator used in automobile. (W24 - Q5a, 03 marks)
20. Explain parking brake indicator (W23 - Q2b, 04 marks)
21. Explain Instrument cluster panel lights. (W23 - Q3a, 03 marks)
22. Describe about two filament modern head light. (W23 - Q2 OR c, 07 marks)
23. Explain the wiring diagram of indicator lamp in four wheeler. (W23 OR - Q4b, 04 marks)
24. Explain the construction and working of head lamp with neat sketch. (W23 OR - Q4c, 07 marks)
25. Explain the effect of reflector design in vehicle headlight in short. (W23 OR - Q4a, 03 marks)
26. Enlist the Six dashboard indicator with their function. (W23 OR - Q5a, 03 marks)

Unit 4: Electronic Fuel Injection and Ignition Systems

Repeated Questions:

1. Explain Feedback carburetor systems. (W25 - Q5a, 03 marks) | (W23 - Q4a, 03 marks)
2. Explain multi-port fuel injection system with neat sketch. (W25 - Q4c, 07 marks) | (W25 - Q4c repeated, 07 marks) | (S22 - Q4 OR c, 07 marks)
3. Explain Multi point Fuel Injection system. (S23 - Q3 OR a, 03 marks)

Other Important Questions:

1. What is the working principle of operation contactless electronic ignition system. (W25 - Q4a, 03 marks)
2. Discuss about current trends in automotive electronic engine management system. (W25 - Q4b, 04 marks)
3. Explain Throttle body injection and MPFI system in detail. (W23 OR - Q4c, 07 marks)
4. Explain Ignition Coil Tester. (S23 - Q4a, 03 marks)
5. Give the advantage and disadvantage of feedback carburetor system(FBC). (W23 OR - Q5b, 04 marks)
6. Enlist the requirements of good injection system. (W23 OR - Q4a, 03 marks)
7. Explain Electronic fuel injection system, list out and also write functions of various sensors used in EFI. (W24 - Q5c, 07 marks)
8. Explain Electronic spark timing control. (W23 - Q5 OR c, 07 marks)

Unit 5: Electronic Systems

Repeated Questions:

1. Explain electromagnetic interference Suppression. (W25 - Q4 OR c, 07 marks) | (W25 - Q4 OR c repeated, 07 marks) | (S25 - Q5b, 04 marks) | (W23 - Q5b, 04 marks)
2. Write short note on / Discuss On Board Diagnostic system used in modern automobiles. (S23 - Q4c, 07 marks) | (W22 - Q5b, 04 marks) | (W24 - Q5b, 04 marks) | (S22 - Q4 OR b, 04 marks)
3. Write short note on recent trend on automotive electronic engine management system. (W22 - Q5 OR a, 03 marks) | (S23 - Q5 OR c, 07 marks)
4. Explain security warning system in brief. (W25 - Q4 OR a, 03 marks) | (W25 - Q4 OR a repeated, 03 marks)

Other Important Questions:

1. Write short note on instrument panel lights and body interior lights. (W25 - Q4b, 04 marks)
2. Explain the working of On Board Diagnostic (OBD) in short. (S22 - Q4 OR b, 04 marks)
3. Explain the effect of interference suppression on vehicle engine in short. (S22 - Q5b, 04 marks)
4. List out various Electronic Dashboard instruments used in automobiles. (W24 - Q5 OR a, 03 marks)
5. Write a note on Engine management System. (W24 - Q5 OR b, 04 marks)
6. Explain engine management system in brief. (W23 OR - Q4b, 04 marks)

Unit 6: Sensors and Actuators

Repeated Questions:

1. Explain/Discuss vehicle speed sensor. (S23 - Q4b, 04 marks) | (W22 - Q4b, 04 marks) (Part of 'Give the types of sensors.')
2. Describe Crank Angle Position Sensors with Neat Sketch. (W23 - Q4b, 04 marks) | (S25 - Q4 OR b, 04 marks) | (S23 - Q5b, 04 marks)
3. Explain Throttle position sensors. (W23 - Q3b, 04 marks) | (S25 - Q4b, 04 marks) | (W23 - Q4 OR b, 04 marks)
4. Explain Oxygen Sensors. (W23 - Q5a, 03 marks) | (W23 OR - Q5c, 07 marks) | (W24 - Q5 OR c, 07 marks)

Other Important Questions:

1. Explain basic arrangement of sensor and also give detail of Crank angle position sensor of vehicles. (W25 - Q5c, 07 marks)
2. Explain working principle of stepper motor. (W25 - Q5 OR a, 03 marks)
3. Write short note on altitude sensor and flow sensor. (W25 - Q5 OR b, 04 marks)
4. List various types of warning light-sensors and explain it. (W25 - Q5 OR c, 07 marks)
5. Give the types of sensors. Explain about oxygen sensors. (W22 - Q4b, 04 marks)
6. Write short note on Fuel metering sensor. (W23 - Q3 OR b, 04 marks) | (S25 - Q3 OR b, 04 marks)
7. Discuss Knock/Detonation Sensors. (S23 - Q4 OR b, 04 marks)
8. Enlist the various Components of Automotive relay and explain the working of Automotive relays. (S23 - Q5c, 07 marks)

Unit 7: Horns and Instrumentation

Repeated Questions:

1. Explain the balancing type fuel gauge. (S23 - Q5a, 03 marks) | (S25 - Q5 OR a, 03 marks) | (S22 - Q5a, 03 marks)
2. Explain the working of speedometer. (S22 - Q5 OR a, 03 marks) | (W24 - Q3c, 07 marks)
3. List various types of horns and explain working of any one. (W22 - Q5b, 04 marks)

Other Important Questions:

1. Difference between speedometer and odometer. (W25 - Q5b, 04 marks)
2. Explain the working of fuel gauge with neat sketch. (W22 - Q4 OR b, 04 marks)
3. Explain working Fuel Gauge. (S23 - Q3a, 03 marks) | (S25 - Q3a, 03 marks)
4. Explain the working of oil level indicator with neat sketch. (W23 OR - Q5c, 07 marks)
5. Explain electronic horn with Neat Sketch. (W23 - Q4 OR c, 07 marks)
6. Explain the working principle of air horn. (W23 OR - Q5b, 04 marks)
7. State the various parts of electronics ignition system & explain their function. (W22 - Q5c, 07 marks)
8. Explain Capacitance discharge ignition system. (S23 - Q5 OR b, 04 marks)
9. Explain Spark Advance Mechanism and Cam Angle in Ignition System. (S25 - Q5 OR b, 04 marks) | (W23 - Q5 OR b, 04 marks)
10. Explain Cam angle RPM Testers used as Testing Devices in Vehicles. (W23 - Q5 OR a, 03 marks)
11. Write short note on Battery or Coil ignition system with neat sketch. (S23 - Q3 OR c, 07 marks)
12. Explain with a neat sketch battery ignition system and explain function of each component. (W24 - Q2c, 07 marks)

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