

**Scheme – I**  
**Sample Question Paper**

**Programme Name : Automobile Engineering**  
**Programme code : AE**  
**Semester : Sixth**  
**Course Title : Automotive Electrical and Electronic Systems**  
**Marks : 70**

22651

**Time: 3Hrs.**

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**Instructions:**

- (1) All questions are compulsory.
- (2) Illustrate your answers with neat sketches wherever necessary.
- (3) Figures to the right indicate full marks.
- (4) Assume suitable data if necessary.
- (5) Preferably, write the answers in sequential order.

**Q.1) Attempt any FIVE of the following.**

**(10 Marks)**

- a) List four types of switches used in automobiles.
- b) Interpret the functions of a Resistor in automotive electrical systems.
- c) State four methods of battery ratings.
- d) Restate the chemical reaction in a lead acid battery.
- e) List types of ignition system.
- f) Explain reasons for providing time delay in automatic head light system.
- g) Discuss functions of Exhaust gas oxygen sensor.

**Q.2) Attempt any THREE of the following.**

**(12 Marks)**

- a) Draw a neat labeled wiring diagram of turn indicator light in automobiles.
- b) Prepare circuit diagram using switch, fuse, battery, electrical load in proper sequence electrical symbols.
- c) Illustrate with simple circuit diagram the testing of Open circuit defect using voltmeter.
- d) List precautions to be taken while charging a lead acid battery.
- e) Illustrate with sketch current output test of an alternator. Predict the possible test results and their inference.

**Q.3) Attempt any THREE of the following.**

**(12 Marks)**

- a) List four components of starting system and state their functions.
- b) Explain working of overrunning clutch with sketch.
- c) Explain working of Distributor less ignition system.
- d) Justify the precautions in handling of ignition system using Hall Effect sensor.

**Q.4) Attempt any Three of the following.**

**(12 Marks)**

- a) Draw block diagram of GPS system and list its applications.
- b) Describe working of Park assist system.
- c) Describe working of an Electric two wheeler with layout.
- d) Explain Flash codes of malfunction indicator lamp.

**Q.5) Attempt any TWO of the following.**

**(12 Marks)**

- a) Explain with sketch construction of stranded wire, state advantage of stranded wire over solid wire and list factors used to determine proper wire size in automotive electrical circuits.
- b) Explain with labeled diagram working of the charging system in automobile and state necessity of output regulation.
- c) Illustrate with sketch current specific gravity test of a battery. Predict possible test results and their inference. List safety precautions to be followed during test.

**Q.6) Attempt any TWO of the following.**

**(12 Marks)**

- a) Illustrate with sketch Free speed test of a starting motor. Predict possible test results and their inference.
- b) Illustrate with sketch Ohm meter test of electronic fuel injector. Predict possible test results and their inference.
- c) Write the Engine coolant temperature Sensor testing procedure using scan tool and state acceptable voltage range in hot and cold engine conditions.

**I- Scheme  
Sample Test Paper I**

**Programme Name : Automobile Engineering**

**Programme Code : AE**

**Semester : Sixth**

**Course : Automotive Electrical and Electronic Systems**

**Marks : 20**

**22651**

**Time: 1 hour**

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**Instructions:** All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

**Q.1 Attempt any FOUR.**

**(8 Marks)**

- a. Draw a neat sketch of relay.
- b. List types of colour codes used for wires in automobiles.
- c. Explain Sulphation in battery.
- d. Explain concept of self excitation in alternator.
- e. State function of neutral safety switch in starting system.
- f. Draw a neat labelled wiring diagram of Horn circuit.

**Q.2 Attempt any TWO**

**(12 Marks)**

- a. Explain working of Automotive fuel gauge with sketch.
- b. Illustrate regulator out-put test with neat sketch.
- c. Describe working of a Bendix drive with sketch.

**Scheme – I**  
**Sample Test Paper II**

**Programme Name : Automobile Engineering**  
**Programme Code : AE**  
**Semester : Sixth**  
**Course : Automobile Electrical and Electronic Systems**  
**Marks : 20**

**22651**

**Time:1 hour**

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**Instructions:**All questions are compulsory

1. Illustrate your answers with neat sketches wherever necessary
2. Figures to the right indicate full marks
3. Assume suitable data if necessary
4. Preferably, write the answers in sequential order

**Q.1 Attempt any FOUR. (8 Marks)**

- a. State four advantages of electronic ignition system over conventional ignition system
- b. Draw magnetic pickup sensor set-up.
- c. Identify full-form of GPS and GPRS.
- d. Define the term TRIP as per OBD-II
- e. Explain function of Mass air flow sensor.
- f. During Electronic Injector sound test, chattering sound is heard, Infer the result.

**Q.2 Attempt any TWO. (12Marks)**

- a. Explain working of computer controlled ignition system with block diagram.
- b. Explain working of Automatic head light dimming and list its important components
- c. Write testing of MAP sensor using scan tool.