

# 17617

**21718**

**3 Hours / 100 Marks**

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.  
(2) Answer each next main Question on a new page.  
(3) Illustrate your answers with neat sketches wherever necessary.  
(4) Figures to the right indicate full marks.  
(5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Attempt any THREE of the following:** **12**
- (i) State the purpose and operation of the following components:
- 1) Fuse  
2) Relay
- (ii) Describe construction of lead acid battery.
- (iii) Draw a schematic diagram of bendix drive. Describe its working.
- (iv) Enlist four methods of triggering primary circuit. Describe one method.
- b) **Attempt any ONE of the following:** **6**
- (i) Draw a schematic diagram of speedometer gauge and describe its working.
- (ii) State two precautions to be taken while jump starting and describe the procedure with schematic diagram.

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- 2. Attempt any FOUR of the following:** **16**
- a) Explain mercury switch and SPDT switch working with help of schematic diagrams.
  - b) Draw neat labelled sketch of relay and explain its working.
  - c) Draw schematic diagram of blower motor and describe its working.
  - d) Describe voltage drop test with help of schematic diagram.
  - e) Draw a circuit diagram of starting system and describe its working in brief.
  - f) Describe initial excitation and self excitation of alternator.
- 3. Attempt any FOUR of the following:** **16**
- a) Describe working of automatic resetting type circuit breaker with neat sketch.
  - b) State the need of ignition system. Describe working of ballast resistor.
  - c) Describe the function of:
    - (i) detonation sensor
    - (ii) camshaft position sensor as regards ignition system.
  - d) List common antitheft systems used in a vehicle. Describe one in brief.
  - e) Describe the construction and working of Engine coolant sensor.
- 4. a) Attempt any THREE of the following:** **12**
- (i) Describe the operation of automatic door lock system.
  - (ii) Describe purpose and operation of keyless entry system.
  - (iii) State the purpose of OBD II. Define the terms:
    - 1) drive cycle
    - 2) trip
  - (iv) Describe DTC structure as per SAE J 2012 with an example.

- b) **Attempt any ONE of the following:** **6**
- (i) Describe the regulator output test with help of a schematic diagram.
  - (ii) Identify and describe operation of ignition system that provides optimum ignition timing while the engine detonates. Draw a schematic diagram for the same.
- 5. Attempt any FOUR of the following:** **16**
- a) Describe purpose and operation of automatic headlight dimming.
  - b) Describe the procedure of battery terminal test with help of a schematic diagram.
  - c) Explain the procedure of sound test for electronic fuel injector.
  - d) Draw a circuit diagram of electronic regulation of alternator and label it.
  - e) Draw block diagram of GPS and label it.
  - f) Describe the procedure for testing of alternator with neat sketch.
- 6. Attempt any FOUR of the following:** **16**
- a) State four parameters of battery specification. List four components of a battery.
  - b) Describe the procedure for quick test of starter motor.
  - c) Describe construction and working of maintenance free battery.
  - d) Differentiate between conventional and electronic ignition system (four points)
  - e) Describe the working of ignition coil with help of a schematic diagram.
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