

Time: 03 Hours

Marks: 80

N. B. (1) Question No. 01 compulsory.

(2) Attempt any three questions out of remaining five questions.

(3) Justify your answer with neat sketches.

Q. 01 Attempt any **four** out of six.

20

- i) What are requirements of battery systems?
- ii) Explain rectification from AC to DC.
- iii) Explain direct ignition system.
- iv) Explain hot wire thin film air flow sensor?
- v) Explain power operated window.
- vi) Write a note on Global Positioning System.

Q. 02 A) What is fuel cell? Explain the construction and working of PEM fuel cell with suitable sketch and their reactions. 10

B) Explain in brief various cables, their sizes, color codes and wiring harness systems used in automotive vehicles. 10

Q. 03 A) Explain principle, construction and working of generator. How it is different from alternator? 10

B) Explain following with neat sketch. 10

- i) Rain sensors
- ii) Oxygen sensor

Q. 04 A) Explain construction, working and setting of head lamp. 10

B) Explain in brief any two types of starter motor drives. 10

Q. 05 A) What is the need of 42 volt technology? Explain transmission from 12 volt to 42 volt system with its advantages and disadvantages. 10

B) Explain following with neat sketch. 10

- i) Motorized actuator
- ii) Stepper motor

Q. 06 A) Describe working of any two intelligent vehicle systems with suitable schematic diagram and also mention their applications. 10

B) Explain in brief Electronic Control Module (ECM) and Operating modes of ECM. 10