



22653

12223

3 Hours / 70 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) Assume suitable data, if necessary.
 - (6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) List the requirements of comfort Air-Conditioning.
- (b) List the Air-conditioning system operational precautions (Any Four).
- (c) Enlist the possible causes, when compressor does not start.
- (d) Mention any four properties of refrigerant.
- (e) State the function of outside temperature sensor and mention its location in vehicle.
- (f) Mention the necessity of evacuation of A/c system before charging.
- (g) State the function of thermostat in vehicle comfort heating system.

2. Attempt any THREE of the following :

12

- (a) List the factors that affect human comfort and state necessity of human comfort in HVAC.
- (b) Draw a neat sketch of split case/duct system with down stream blower.
- (c) Explain the function and working of vacuum check valve with sketch.



- (d) While visual inspection of Air-condition system, if foam or oil streak found in sight glass, then list the causes of it.
- (e) Sketch drive systems for A/c compressor and write their significance.

3. Attempt any THREE of the following : 12

- (a) Compare between controlled ventilation and un-controlled ventilation.
- (b) With a neat sketch explain working of superheat switch.
- (c) Enlist the service equipments and tools required for maintenance of A/c system.
- (d) Mention any four Faults occur in comfort heating system and its remedy.

4. Attempt any THREE of the following : 12

- (a) With neat sketch explain vapour compression refrigeration system.
- (b) Differentiate between Receiver drier and accumulator.
- (c) Describe construction & working of sun load sensor used in a car.
- (d) Explain refrigerant leak detection method by using halide leak detector.

5. Attempt any TWO of the following : 12

- (a) Describe air distribution of case/duct system with a neat sketch.
- (b) Explain with sketch the working of electromagnetic clutch used in A/c system.
- (c) Describe the charging procedure of refrigerant in A/c system with sketch.

6. Attempt any TWO of the following : 12

- (a) Explain with sketch the working of Rotary Vane type compressor.
- (b) With a neat block diagram, describe electronic climate control system used in HVAC system.
- (c) Explain the maintenance of following service equipment and tools used in servicing of A/c system : (i) Vacuum pump (ii) Recycling unit

