

22653

21222

3 Hours / 70 Marks

Seat No.

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15 minutes extra for each hour

- 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) Define : (i) Comfort zone (ii) Wind chill factor.
- (b) State function of 'Air Filter' in A.C. system.
- (c) Write two precautions to be taken while operating air conditioning system of a car.
- (d) Give application and purpose of 'Sun Load Sensor'.
- (e) List service equipment required for maintaining A.C. system.
- (f) List types of heating system.
- (g) State function of control valve used in heating system.

2. Attempt any THREE of the following :

12

- (a) Explain with P-V diagram vapour compression refrigeration cycle.
- (b) Describe with sketch the construction of split type duct system.
- (c) List eight desirable properties of refrigerant.
- (d) Differentiate between conventional climate control system and electronic climate control system.
- (e) Describe with sketch maintenance of heater core.

- 3. Attempt any THREE of the following : 12**
- (a) Describe environmental and safety aspects of HVAC system.
 - (b) Select a suitable case and duct system for a light motor vehicle with relevant justification.
 - (c) Draw a general layout of automotive A.C. system and describe its working.
 - (d) Sketch a relevant A.C. control system for a bus and explain its working.
- 4. Attempt any THREE of the following : 12**
- (a) Sketch drive systems used for compressor and give their significance.
 - (b) State four precautionary measures required for packaging and storage of refrigerant.
 - (c) Describe with sketch working of in-car temperature sensor.
 - (d) Describe with sketch procedure of leak testing of automobile air conditioning system.
- 5. Attempt any TWO of the following : 12**
- (a) Describe the requirements of HVAC system for heavy goods vehicle.
 - (b) Describe with sketch construction and working of the 'Thermostatic Expansion Valve'.
 - (c) Describe with sketch procedure of evacuation and charging of refrigerant in car A.C. system.
- 6. Attempt any TWO of the following : 12**
- (a) State any two faults in Electromagnetic clutch. Give causes and suitable remedies for them.
 - (b) Explain the use of following switches in A.C. system :
 - (i) High and low side temperature switch
 - (ii) High and low pressure switch
 - (iii) Pressure regulator
 - (c) Explain with sketch process of moisture removal from A.C. system.
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