

17620

11920

3 Hours / 100 Marks

Seat No.

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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) 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) Differentiate between controlled and uncontrolled ventilation (four points).
 - (ii) State desirable properties of refrigerants used in air-conditioning system.
 - (iii) Describe construction and working of superheat switch.
 - (iv) Explain rotary vane air cycle system with sketch.
- (b) Attempt any **ONE** of the following : **08**
- (i) Explain with block diagram the working of 'Rear heating and cooling system'.
 - (ii) Define 'human comfort zone', show comfort zone on psychrometric chart.

2. Attempt any FOUR of the following :**16**

- (a) Compare thermostatic expansion valve and fixed orifice tube on any four aspects.
- (b) Explain the construction of air intake section with neat sketch.
- (c) Explain the terms
 - (i) air movement and (ii) wind chill factor
- (d) Explain working of low pressure switch with sketch.
- (e) Explain construction and working of reciprocating type compressor.
- (f) State the function of 'Drier'. Explain its construction with neat sketch.

3. Attempt any FOUR of the following :**16**

- (a) Explain construction and working of evaporator.
- (b) State the functions and locations of :
 - (i) In car temperature sensor
 - (ii) Sun load sensor
- (c) State the environmental and safety aspects in automobile air-conditioning.
- (d) Explain Nitrogen leak tester.
- (e) Explain scroll type compressor.

4. (a) Attempt any THREE of the following :**12**

- (i) Draw neat labelled layout of Automobile air-conditioning, system.
- (ii) Explain construction and working of typical vacuum system.
- (iii) Explain in detail the moisture removal procedure.
- (iv) Explain the concept of 'Aspirator'.

(b) Attempt any ONE of the following : **08**

- (i) Explain with neat sketch the working of thermostatic expansion valve.
- (ii) Explain the working of 'comfort heating' with neat sketch.

5. Attempt any FOUR of the following : **16**

- (a) Discuss requirements of HVAC in ;
 - (i) light motor vehicle
 - (ii) heavy goods vehicle.
- (b) Explain construction and working of down stream duct system.
- (c) Explain drive systems for compressor.
- (d) Give faults, causes and remedies of Electro-magnetic clutch.
- (e) State the functions of following components :
 - (i) Vacuum reserve tank
 - (ii) Check relays
- (f) Explain charging hose with shut off valve.

6. Attempt any FOUR of the following : **16**

- (a) Explain externally equalized thermostatic expansion valve.
 - (b) Draw a neat labelled sketch of electronic climate control system.
 - (c) Explain the procedure of charging refrigerant of the system.
 - (d) Explain construction and working of remote bulb.
 - (e) Describe construction and working of pressure regulator.
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