17620

21415

3 Hours / 100 Marks Seat No. | | | | | | | | |

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) Describe radiation heat transfer and convection heat transfer.

(ii) Explain construction and working of downstream duct system with neat sketch.

(iii) Explain with neat sketch accumulator.

(iv) Describe construction and working of superheat switch.

b) **Attempt any ONE of the following:** **6**

(i) State the applications of uncontrolled ventilation and explain its working.

(ii) Explain with block diagram electronic climate control system.

Marks

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

a) Discuss requirements of HVAC system in light motor vehicle.

b) Compare thermostatic expansion valve and fixed orifice tube on any four aspects.

c) State the concepts of aspirator and time delay relay.

d) Explain with neat sketch halide (Freon) leak detector.

e) State any four functions of comfort heating system.

f) Explain construction and working of electromagnetic clutch.

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

a) Describe construction and working of evaporator.

b) State the functions and location of:

(i) Sun load sensor

(ii) Outside temperature sensor

c) State any four properties of refrigerant.

d) Explain working of comfort heating system with suitable diagram.

e) Explain construction and working of reciprocating type compressor.

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

(i) State two environmental and two safety aspects in HVAC system.

(ii) Give the general layout of Automotive AC system and state function of each component.

(iii) Describe the term of modulating and controlling action as a function of thermostatic expansion valve.

(iv) Explain construction and working of vacuum motor with neat sketch.

Marks

b) **Attempt any ONE of the following:** **6**

(i) Explain with neat sketch rear heating system.

(ii) Describe construction and working of remote bulb.

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

a) Explain working of air intake section with neat sketch.

b) Explain construction and working of fixed orifice tube.

c) Explain working of rotary vane air cycle system with neat sketch.

d) Explain the construction and working of check valve.

e) State causes of fault and remedy of compressor (any four).

f) How do you carry out leak test and temperature test of AC system?

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

a) Explain the drive system for compressor in Automobile air conditioning.

b) Discuss the construction of charging hose with shutoff valve.

c) Explain the working of typical vacuum system with neat sketch.

d) Explain the construction and working of high pressure switch.

e) Explain the construction and working of vacuum reserve tank with neat sketch.

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