



17620

11819

3 Hours / 100 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.*

Marks

1. A) Attempt **any three** of the following : **12**
- i) State various safety aspects used in HVAC system.
 - ii) Explain with neat sketch, air intake section used in automobile air conditioning system.
 - iii) Draw general layout of automobile air conditioning system and state function of evaporator.
 - iv) State the purpose of high side temperature switch and low side temperature switch and show its location in automobile air conditioning system.
- B) Attempt **any one** of the following : **6**
- i) Explain the following types of controlled ventilation :
 - a) Ram air ventilation system
 - b) Power ventilating system.
 - ii) Explain with block diagram, electronic temperature control system.
2. Attempt **any four** of the following : **16**
- a) Explain with one example, following modes of heat transfer :
 - i) Conduction
 - ii) Radiation
 - b) Explain H type thermostatic expansion valve.
 - c) Differentiate between electronic climate control system and manual climate control system.
 - d) How moisture is removed from automobile air conditioning system ?
 - e) Explain with neat sketch electromagnetic clutch.
 - f) State causes and remedies for following faults that occurs in comfort heating system :
 - i) Defrosting insufficient
 - ii) Little or no heat.

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3. Attempt **any four** of the following : 16
- a) Draw neat sketch of accumulator and state its function.
 - b) State function and location of
 - i) Sunload sensor
 - ii) In car temperature sensor.
 - c) Mention desirable properties of refrigerant used for automobile air conditioning system.
 - d) Explain with neat sketch working of comfort heating system.
 - e) Explain with neat sketch, serpentine belt drive system.
4. A) Attempt **any three** of the following : 12
- i) Explain with neat sketch, independent case system with downstream blower.
 - ii) Differentiate between internally equalised TXV and externally equalised TXV.
 - iii) Explain the following factors in human comfort control.
 - a) Air movement
 - b) Wind chill factor
 - iv) Explain the following functions of TXV :
 - a) Throttling action
 - b) Modulating action.
- B) Attempt **any one** of the following : 6
- i) Explain with neat sketch, working of thermostatic expansion valve.
 - ii) Explain function of the following in air conditioning system :
 - a) Evaporator
 - b) Condenser
 - c) Accumulator.
5. Attempt **any four** of the following : 16
- a) Explain with neat sketch, core section used in automobile air conditioning system.
 - b) Explain with neat sketch, rotary vane type compressor.
 - c) Explain with neat sketch, fixed orifice tube used in automobile air conditioning system.
 - d) Explain with neat sketch, working of superheat switch.
 - e) State causes and remedies for following faults in electromagnetic clutch :
 - i) Burn hub, pulley and/or coil
 - ii) Clutch to engage or disengage improperly.
 - f) How do you carry out leak test for AC system ?
6. Attempt **any four** of the following : 16
- a) Explain with neat sketch, working of reciprocating compressor used in AC system.
 - b) State function of connector and list different types of connectors.
 - c) Explain with neat sketch, concept of aspirator.
 - d) Write procedure of charging of refrigerant.
 - e) Explain with sketch, halide leak detector.
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