

Printed Pages : 3



EAU-042

(Following Paper ID and Roll No. to be filled in your Answer Book)

**PAPER ID : 990042**

Roll No.

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**B. Tech.**

(SEM. VII) (ODD SEM.) THEORY  
EXAMINATION, 2014-15  
**AUTOMOTIVE AIR-CONDITIONING**

Time : 2 Hours]

[Total Marks : 50

**Note:** Be precise and scientific in writing.  
Attempt all questions.

SECTION-A

**2×5=10**

- 1 Attempt all questions. All questions carry equal marks.
- Define fouling factor.
  - Differentiate between sensible heating and sensible cooling.
  - Write the factor affecting comfort air conditioning.
  - Define Fan efficiency.
  - Write the components of air conditioning system.

## SECTION-B

**5×3=15**

2 Attempt any THREE questions.

All questions carry equal marks.

- (i) Write the location for fitting the air conditioning in automobiles.
- (ii) Write the continuity equation for duct.
- (iii) Write the expression of work done of single stage compressors.
- (iv) Write the diagnostic procedure for ambient condition affecting system pressure.
- (v) Derive the expression for COP of air conditioning.

## SECTION-C

**5×3=15**

Attempt ALL questions. All questions carry equal marks.

3 Write working of heater system used in ford automatically controlled air system.

OR

Describe the various methods of air conditioning duct design.

Why are dampers required in some systems?

4. Write down various trouble shooting occurs in air conditioning system, and how to increase the COP of the system?

OR

Classify different expansion devices. Explain the working of thermostatic expansion valve with neat sketch.

5. Discuss the capacity control systems for reciprocating and centrifugal compressors.

OR

Write the name of refrigerants used in air conditioning of automotive. Differentiate the thermodynamic and physical properties of a refrigerant.

6. Make a comparative study of flooded and non flooded shell and tube type evaporators based on the capacity, condition of vapour leaving the evaporator, heat transfer effectiveness, construction and control.

OR

Prove that the enthalpy of the humid air remains constant along a wet bulb temperature line on the psychrometric chart.

7. Discuss briefly the different types of heat loads which have to be taken into account in order to estimate the total heat load of any model of passenger car of Ford Company.

OR

Derive the expression for heat transfer coefficient for nucleate pool boiling.

