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REFRIGERATION AND AIR CONDITIONING

6TH Exam/MECH/AUTO/5306/4453/May'15

Duration: 3 Hrs. **M.Marks: 75**

SECTION-A

Q.1. **Fill in the blanks:** 1 x 15

a) _____ is the ratio of actual C.O.P and theoretical C.O.P

b) Reversed Carnot cycle assumes that all processes in the cycle are _____

c) When the suction pressure decrease the refrigerating effect and C.O.P are _____

d) A domestic type window air conditioner capacity may be approximately _____

e) The refrigerant, commonly used in vapour absorption system is _____

f) Freezing point temperature for R-717 is _____

g) _____ may be used to detect leak of Freon vapour.

h) Thermostatic expansion valve is used in _____of evaporators.

i) The difference between the dry bulb and wet bulb temperature is called_____

j) The rate at which body produces heat is termed as _____

True or False

1. Ammonia is never used as refrigerant in a domestic refrigerator.
2. C.O.P of heat pump is always more than unity.
3. R-22 has the lower freezing point.
4. C.O.P of vapour absorption system is very high.
5. Sensible heating during humidification process decreases

SECTION-B

Q.2. **Attempt any six questions**: 5 x 6

i. Discuss the properties of ideal refrigerants.

ii. Explain thermostatic expansion valve and give its applications.

iii. Explain principle of ammonia vapour absorption system.

iv. What is the effect of super heating of vapour? Show with T-S and P-H diagram.

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v. Write down the advantage and disadvantage of sir refrigeration system over vapour compression system.

vi. Discuss briefly a psychometric chart and give its uses.

vii. Explain advantage and disadvantage of flooded type evaporator.

viii. Differentiate between primary and secondary refrigerants.

SECTION-C

Attempt any three questions: 3 x 10

Q3. Describe the Bell Coleman air cycle and obtain an expression for COP of the cycle.

Q4. Explain construction and working of solar vapour absorption system.

Q5. Describe the following process.

(a) Cooling dehumidification (b) Heating and dehumidification.

Q6. What is the volumetric efficiency of a compressor? Find the expression for the volumetric efficiency in terms of working pressure ratio of refrigerating cycle.

Q7. Explain the construction and working of principle of single stage, single acting reciprocating compressor.

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