



KERALA AGRICULTURAL UNIVERSITY  
B.Tech. (Ag. Engg.) 2015 Admission  
V Semester Final Examination-January-2018

Phpt.3104

Refrigeration and Air Conditioning (2+1)

Marks:50  
Time: 2 hours  
(10x1=10)

**Fill in the blanks**

- 1 Ideal COP of a domestic refrigerator working between 35°C and -18°C is -----
- 2 One Ton of refrigeration (1 TR) is equal to -----kW
- 3 The minimum power required in kW for operating a refrigerator of 1TR cooling capacity working between 35°C and -18°C is -----
- 4 R22 refrigerant used in domestic air conditioning systems is a------(HFC/HCFC) refrigerant.
- 5 Material suggested for use in ammonia refrigeration system is------(Brass/Copper/Wrought iron).
- 6 Global Warming Potential (GWP) of CO<sub>2</sub>-----
- 7 Refrigerant used in aircraft refrigeration system is------(R744/R22/R729).
- 8 ------(Reciprocating/Rotary) type of compressors are generally used in air conditioning systems.
- 9 The parameter that remains constant during sensible heating or cooling is-----
- 10 In psychometric chart-----lines are approximately parallel to constant wet bulb temperature lines.

**Write Short notes on ANY FIVE of the following**

(5x2=10)

- 1 Define one ton of refrigeration.
- 2 What are the essential components of a simple vapour compression refrigeration system?
- 3 Name four types of compressors used in refrigeration system.
- 4 What is dew point temperature?
- 5 Why simple vapour compression refrigeration system is not recommended for refrigeration temperature below -35°C?
- 6 What is the difference between RSHF and GSHF.
- 7 What are the major sources of heatload for cold storage / low temperature applications?

**Answer ANY FIVE of the following**

(5x4=20)

- 1 What are the essential properties of a good refrigerant.
- 2 Explain vapour compression refrigeration system with suction line heat exchanger.
- 3 Write short note on bypass factor (BPF) and apparatus dew point (ADP) of cooling coils.
- 4 Define Specific humidity and Relative humidity.
- 5 Derive an expression for ideal COP of vapour absorption refrigeration system.
- 6 Write short note on types of condensers used in vapour compression refrigeration system.
- 7 Write short note on Cascade refrigeration system

**Write an essay on ANY ONE of the following**

(1x10=10)

- 1 a Explain the actual vapour compression system on p-h chart showing typical variation from theoretical system.  
b Explain with the aid of p-h chart
  - i the effect of increase in condenser pressure
  - ii decrease in evaporator pressure and
  - iii increase in suction gas super heat on the performance of a vapour compression refrigerator.
- 2 Explain with neat sketches different types of expansion devices and evaporators

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