KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Food Engg.) 2018 Admission
III Semester Final Examination-December 2019

Fden.2103 **Refrigeration and Cold Storage (1+1)** **Marks: 50**
Time: 2 hours

I **Fill in the blanks:** **(10x1=10)**

1. Enthalpy is the sum of _____ and _____.
2. VCR means _____.
3. Throttling process is a _____ process
4. Low temperature refrigeration deals with _____ ^{0} C to _____ ^{0} C
5. 1 TOR is equal to _____ kilo Joules per min. or kilo watt.

State True or False

6. PMM2 deals with Heat engine.
7. R22 has one chlorine atom.
8. Insulators are good conductors of current.
9. Filter drier is used between condenser and evaporator.
10. In eggs desiccation (or) dehydration is not possible.

II **Write Short notes on ANY FIVE of the following** **(5x2=10)**

1. What do you mean by Latent heat?
2. Where does the low side float valve fit in?
3. Define the term Azeotrope
4. Write different defrosting methods available
5. Define the term chilling
6. List out the desirable characteristics of Insulators.
7. Write a note on any one Defrosting method.

III **Answer ANY FIVE of the following** **(5x4=20)**

1. Draw the simple vapour compression cycle in TS and Ph diagram and list out the salient features of it.
2. Draw a simple diagram of shell and tube evaporator and explain it.
3. Discuss on condensers and its types and explain air cooled & water cooled cooling towers with neat sketch.
4. Explain the Refrigerated sea water system with neat sketch.
5. Explain the thermoelectric refrigeration systems.
6. With neat sketch explain VAR.
7. Draw the heating and humidification processes in psychometric chart.

IV **Write an essay on ANY ONE of the following** **(1x10=10)**

1. A commercial refrigerator operates with R12 between 1.2368 bar and 13.672 bar. The vapour is dry and saturated at the compressor inlet. Assuming isentropic compression, determine the theoretical COP of the plant. The isentropic discharge temperature is 64.86^{0}C. If the actual COP of the plant is 80% of the theoretical, calculate the power required to obtain a refrigerating capacity of 1TR. If the liquid is sub cooled through 10^{0}C after condensation, calculate the power required. The properties are given below.

Saturation temperature	Saturation Pressure(bar)	Enthalpy(kJ/kg)		Entropy(kJ/kg K)	
		liquid	vapour	liquid	vapour
-25 ^{0} C	1.2368	13.33	176.48	0.0552	0.7126
55^0 C	13.672	90.28	207.95	0.3197	0.6674

2. Discuss on pathogenic micro organisms and spoilage of fish during chilled storage

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