KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agrl. Engg.) 2019 Admission
V Semester Final Examination – January 2022

Fape.3105 **Refrigeration and Air Conditioning (2+1)**

Marks: 50
Time: 2 hours

I **State True or False** **(10x1=10)**

1. The amount of heat required to raise the temperature of one pound of substance through one degree Fahrenheit is called specific heat of the substance.
2. Heat and work are not mutually convertible.
3. The temperature recorded by a thermometer is known as dry bulb temperature.
4. Enthalpy is total heat content in a body or substance.
5. Heat can flow from lower level to higher level without the aid of an external agency.
6. Trapped air from refrigeration system is allowed to escape by using purging valve.
7. Chemical name of carbon dioxide is R-717.
8. Colour code of discharge line in Ammonia vapour compression refrigeration system is red.
9. Evaporative type of condensers are used in most of the Ammonia refrigeration plant.
10. Condenser is a place where heat exchange takes place and products gets frozen.

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

1. Thermodynamic properties.
2. Thermodynamic cycle.
3. Entropy and Enthalpy.
4. Air-cooled condensers.
5. Automatic expansion valve.
6. Reciprocating compressor.
7. Ducts.

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

1. With the help of a diagram explain the working mechanism of vapour compression refrigeration system.
2. Give the classification of evaporator. Explain flooded type of evaporator used in ammonia refrigeration plant.
3. Give the classification of condensers. Explain shell and tube condenser.
4. Give the classification of air conditioning system. Explain summer air conditioning system.
5. Explain the important terms used in psychrometric chart and its uses.
6. Explain primary refrigerants with examples.
7. Explain the application of refrigeration and air conditioning in food industry

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

1. Explain the working mechanism, principle parts and differences between vapour absorption refrigeration system over vapour compression refrigeration system.
2. Discuss the different types of heat loads which have to be taken in to account in order to estimate the total heat load of freezing plant.

****