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BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN MECHANICAL ENGINEERING
REFRIGERATION & AIR-CONDITIONING
FIFTH SEMESTER EXAMINATION

Time: 3 Hours   **Total Marks: 80**

PART - A   (3m x 10 = 30m)

Note 1:Answer all questions and each question carries 3 marks

2:Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. An refrigeration plant working on Carnot cycle between temperature limits of 30^0C and -5^0C has a capacity of 10 tons. Determine the power input to the plant

2. Mention the uses of Flash Chamber

3. Draw the T-S and P-H diagram of vapour compression refrigeration cycle when the refrigerant is dry saturated at the beginning of compression and after the condensation is saturated liquid

4. Mention the desirable properties of refrigerant and absorbent pair

5. What is the function of Compressor in vapour compression refrigeration system

6. State the function of capillary tube. What are its advantages and limitations

7. What are the factors to be considered for selection of refrigerants

8. List out characteristics of good distribution system

9. List out factors affect the human comfort

10. List out different types of cooling towers used in air conditioning system

PART - B   (10m x 5 = 50m)

Note 1:Answer any five questions and each carries 10 marks

2:The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. **Explain following methods of Refrigeration**

    a) Dry Ice refrigeration   b) Steam Jet refrigeration

12. The ammonia refrigeration plant works between the temperature limits of -15^{0}C to 30^{0}C. The working fluid ammonia is assumed to be dry saturated at the end of compression. Calculate
(a)Refrigerating effect   (b) COP

Temperature,^{0}C	Enthalpy, KJ/Kg		Entropy, KJ/KgK	
	Liquid, h_f	Vapour, h_g	Liquid, S_f	Vapour, S_g
-15^{0}C	112.2	1424.9	0.4564	5.5423
30^{0}C	322.6	1468.1	1.2017	4.9809

13.   (a)Explain the purpose of Analyzer and Rectifier in vapour absorption refrigeration system.
(b)Draw the line diagram of simple vapour absorption refrigeration system and label the parts on it

14. Explain the working of following type of condensers with the help of neat sketches.
       (i)   Evaporative condenser
       (ii)   Shell and coil type condenser

15. (a) What are the factors to be considered for the selection of refrigerant
    (b)   Differentiate the primary and secondary refrigerants

16. Explain the following duct systems
    (a) Loop Perimeter duct system.
    (b) Radial Perimeter duct system

17. The specific humidity of atmospheric air at 30^{0}C is 0.01 Kg/Kg of air. The barometric pressure is 1,01325bar. Calculate (i) Partial pressure of water vapour
                  (ii) The relative humidity
                  (iii)Dew Point Temperature

18. Explain Summer air conditioning system for the following conditions
    (a) Hot and wet out door conditions.
    (b) Hot and dry out door conditions

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