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4758**BOARD DIPLOMA EXAMINATION, (C-14)****JUNE-2019****DME - SIXTH SEMESTER EXAMINATION****REFRIGERATION & AIR CONDITIONING**

Time: 3 Hours

Max.Marks: 80

PART-A**10X3=30M**

Instructions: 1) Answer **all** questions.
 2) Each question carries **three** marks.
 3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

- 1) A Carnot cycle operates between temperature limits 47°C and -10°C determine the COP when operating as a refrigerator and heat pump
- 2) Draw a neat sketch of vapour compression refrigeration system
- 3) Write any three combinations of Refrigerant and absorbent pairs in VAR system.
- 4) Write any three differences between air cooled condenser and water cooled condenser.
- 5) List out different types of evaporators.
- 6) Write the applications of air conditioning.
- 7) Define a) Wet bulb temperature
b) Dry bulb temperature
- 8) What is sensible heating and show it on psychrometric chart.
- 9) What is By pass Factor. Write down BPF formula for heating and cooling coils.
- 10) Write different leak detection methods of Feron and ammonia.

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[Contd...]

PART-B

5X10=50M

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- Instructions:** 1) Answer any **five** questions
2) Each question carries **ten** marks
3) Answer should be comprehensive and the criteria for valuation is the content but not the length of the answer.

- 11) Explain Bell-Coleman cycle with neat sketch and draw P-V and T-S diagrams.
- 12) The ammonia refrigeration plant works between temperature limits -15°C and 30°C. The working fluid ammonia is assumed to be dry saturated at the end of compression. Calculate
a) Refrigerating effect b) COP

Temperature °C	Enthalpy KJ/kg		Entropy KJ/kg K	
	liquid	vapour	liquid	vapour
-15	112.17	1424.919	0.4564	5.5423
30	322.57	1468.09	1.2017	4.9809

- 13) a) write any five differences between vapour compression refrigeration system and Vapour Absorption refrigeration system?
b) In a vapour absorption refrigerator the heat supplied at 120°C and the temperature in the refrigerator to be maintained at -5°C. Find the maximum COP if the refrigerator load is 20 tons and actual COP is 70% of the max COP. Find the heat actually supplied. Take the temperature of atmosphere as 30°C.
- 14) Describe different properties of refrigerants.
- 15) Explain working of ice plant with neat sketch.
- 16) (a) Explain the different types of duct systems. 6M
(b) Explain the working of centrifugal fan with neat sketch. 4M
- 17) What is the importance of mixing of air streams in air conditioning and write the properties of mixture.
- 18) Explain summer air conditioning with neat sketch.

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