

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Third Semester

MR18306– MARINE REFRIGERATION AND AIR CONDITIONING

(Use of Refrigeration and Air Conditioning tables, charts and psychometric chart are permitted)

*(Marine Engineering)***(Regulation 2018)****Time: Three Hours****Maximum : 100 Marks**Answer **ALL** questions**PART A - (10 X 2 = 20 Marks)**

	CO	RBT
1. Draw the schematic diagram of the refrigeration system and heat pump.	1	R
2. List some causes of Ozone depletion.	1	R
3. Why drier is used in the marine refrigeration plant?	2	U
4. What is TEV valve & where it is located?	2	R
5. List some of the advantages of refrigerated containers.	3	R
6. Why refer containers are need to maintain the temperature?	3	U
7. What are all the conditions to be satisfied in Air conditioner for the better personal comfort?	4	U
8. What is Psychrometry with reference to air?	4	R
9. List few types of compressor used in the refrigeration and the Air conditioning system.	5	R
10. What are all the safety equipments fitted in the Refrigeration system?	5	R

PART B - (5 X16 = 80 Marks)

11. (a) Draw and explain the reversed Carnot cycle and vapor compression cycle in detail. **(16)** **1** **U**

(OR)

- (b) What is meant by coefficient of performance of a refrigerator And Explain the difference between a heat engine, Refrigerator and heat pump with simple block diagram? **(16)** **1** **U**

12. (a) Draw and explain the construction and operation of marine refrigeration system. (16) 2 U
- (OR)**
- (b) Explain the various desirable properties of the refrigerant in detail. (16) 2 U
13. (a) Explain in brief:
- (a) Air flow within the reefer containers. (8) 3 U
- (b) Power supply for the reefer containers. (8) 3 U
- (OR)**
- (b) Explain the maintenance carried out in the reefer containers. (16) 3 U
14. (a) Draw and explain the Double duct air conditioning system used onboard ship. (16) 4 U
- (OR)**
- (b) (i) Explain the factors affecting the comfort air conditioning. (8) 4 U
- (ii) Briefly explain the equipments used in air Conditioning system with simple diagram. (8) 4 U
15. (a) Sketch and describe construction of shell and tube water cooled condenser and also explain the effect of fouling in condenser. (16) 5 U
- (OR)**
- (b) Sketch and describe working of Automatic expansion valve. (16) 5 U