BT MRE-VI(R/S)-06-23-2345 Reg. No. | | | | | | | | |

A

B.Tech. Degree VI Semester Regular/Supplementary Examination in Marine Engineering June 2023

19-208-0604 MARINE REFRIGERATION AND AIR CONDITIONING

(2019 Scheme)

Time: 3 Hours Maximum Marks: 60

Course Outcome

On successful completion of the course, the students will be able to:

CO1: Understand the different refrigeration cycles and different refrigeration systems.
CO2: Gain knowledge regarding marine refrigeration plant with multiple compression and evaporation and different refrigerants.
CO3: Explain the different components and maintenance of marine refrigeration plant and the refrigeration of cargo hold.
CO4: Understand about the properties of gas mixtures and air & water vapour mixtures.
CO5: Gain knowledge on basic principles of air conditioning and heat load calculation of AC plant.

Bloom's Taxonomy Levels (BL): L1 – Remember, L2 – Understand, L3 – Apply, L4 –Analyze, L5 – Evaluate, L6 – Create

PI – Programme Indicators

(Answer *ALL* questions) (5 × 15 = 75)

			Marks	BL	CO	PI
I.	(a)	Sketch and explain a simple vapour compression system along with the p-H and T-S diagrams.	9	L2	1	1.4.1
	(b)	Discuss the effect of variation in suction and discharge pressures on the COP of a vapour compression refrigeration system.	6	L3	1	1.4.1
		OR				
II.		Sketch and explain a vapour compression system along with the p-H and T-S diagrams, where superheating and sub-cooling of refrigerant is involved.	15	L2	1	1.4.1
III.	(a)	Discuss the application of refrigeration system in liquefied gas carriers.	10	L3	2	1.4.1
	(b)	What are the factors influencing the choice of a refrigerant?	5	L1	2	1.4.1
		OR				
IV.		Sketch and explain a compound refrigeration system with multi-stage compression.	15	L2	2	1.4.1
V.		With the help of sketches explain the different systems of cargo hold refrigeration.	15	L2	3	1.4.1
		OR				
VI.		Depict various control and safety equipment used in a vapour compression refrigeration system with the help of a neat sketch and mention their functions.	15	L2	3	1.4.1

(P.T.O.)

			Marks	BL	CO	PI
VII.		Explain the following terms with respect to air and water vapour mixture: (i) Relative humidity and absolute humidity (ii) Dew point temperature (iii) Dry and wet bulb temperatures.	15	L2	4	1.4.1
		OR				
VIII.	(a)	With respect to gas mixtures define Dalton's Law and Amagat's Law.	6	L1	4	1.4.1
	(b)	Explain the importance of Psychrometric chart in air conditioning.	9	L2	4	1.4.1
IX.		Explain the various factors to be considered in the design of ducts for air conditioning.	15	L2	5	1.4.1
		OR				
X.		Write short notes on the following: (i) Engine room ventilation (ii) Battery room ventilation (iii) CO_2 room ventilation.	15	L1	5	1.4.1

Blooms's Taxonomy Levels
L1 – 17.33%, L2 – 72%, L3 – 10.66%.

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