

Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

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Fourth Semester B.E. Degree Examination Marine Heat Engine and Air Conditioning

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module -1			*Bloom 's Taxono my Level	Marks
Q.01	a	Define the following terms related to reciprocating compressor: i) Single acting and Double Acting Compressor, ii) Compressor Capacity, iii) Volumetric Efficiency, iv) Clearance Volume	L1	08 Marks
	b	Discuss the applications of compressed air.	L2	06 Marks
	c	A two stage reciprocating compressor works between pressure limits of 1 bar and 8 bar and draws in air at 15° C at the rate of 467lit/min. The compression in both the stage is isentropic and intercooling is perfect. Estimate the minimum power supplied.	L3	06 Marks
OR				
Q.02	a	What are the drawbacks of a single stage compressor for producing high pressure and how these are overcome by multistage compressor?	L1	06 Marks
	b	With the help of a diagram explain the effect of intercooling on a 2-stage compressor.	L2	07 Marks
	c	Derive an expression for work done for a single stage, single acting reciprocating compressor with clearance volume.	L3	07 Marks
Module-2				
Q. 03	a	Define the following terms: i) COP, ii) 1 Ton of refrigeration	L1	04 Marks
	b	Explain in brief the desirable properties of refrigerant.	L2	10 Marks
	c	Explain reversed carnot cycle using P-V and T-S diagram and hence obtain an expression for COP.	L3	06 Marks
OR				
Q.04	a	List commonly used refrigerants in industries.	L1	02 Marks
	b	Draw the flow diagram of a simple vapour compression refrigeration system and explain its working. Represent the process on T-S and P-H diagrams.	L2	10 Marks
	c	Explain the methods to improve COP of refrigeration system.	L3	08 Marks
Module-3				
Q. 05	a	What are the main purposes of ship's refrigeration system?	L1	04 Marks
	b	Explain the construction and working of ship's refrigeration system.	L2	12 Marks
	c	Discuss briefly about compressor safety devices.	L3	04 Marks
OR				
Q. 06	a	What do you mean by refrigerant, refrigeration and refrigerator?	L1	06 Marks
	b	Write a note on following devices: i) Oil Separator, ii) Thermostatic Expansion Valve	L2	08 Marks
	c	Write a note on charging of refrigeration plant.	L3	06 Marks

Module-4				
Q. 07	a	Define the following: a) dry bulb temperature, b) dew point temperature, c) specific humidity	L1	06 Marks
	b	Explain with a neat sketch the working of container cooling system.	L2	06 Marks
	c	Show the following processes on psychrometric chart: a) Sensible Heating and Cooling, b) Cooling and Dehumidification	L2	08 Marks
OR				
Q. 08	a	Explain the following terms used in air conditioning: a) absolute humidity, b) specific humidity, c) relative humidity.	L1	06 Marks
	b	Explain with a neat sketch, the working of ship's air conditioning system	L2	14 Marks
	c			
Module-5				
Q. 09	a	What are the differences between parallel and counter flow heat exchanger.	L1	04 Marks
	b	Explain condensers and evaporators.	L2	06 Marks
	c	Obtain an expression for the effectiveness of parallel flow heat exchanger by NTU method.	L3	10 Marks
OR				
Q. 10	a	Explain classification of heat exchanger.	L1	06 Marks
	b	Write a note on shell and tube type heat exchanger.	L2	04 Marks
	c	Derive the expression for LMTD for a parallel flow heat exchanger. List out the assumptions made.	L3	10 Marks