

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL - 2024**

REFRIGERATION AND AIR CONDITIONING

[Maximum marks: 75]

[Time: 3 Hours]

PART A

I. Answer all the following questions in one word or one sentence. Each question carries 1 mark

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	Define critical temperature.	M1.01	R
2	1 tonne of refrigeration =KJ/s.	M1.02	R
3	Give the chemical name for R744 refrigerant.	M2.04	R
4	What do you mean by primary refrigerant?	M2.04	R
5	What do you mean by word "hermetic"?	M3.01	R
6	Mention any two types of evaporators.	M3.03	R
7	Write the expansion of HVAC.	M4.07	R
8	Define dew point temperature.	M4.01	R
9	Define wet bulb temperature.	M4.01	R

PART B

II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Write three methods of refrigeration.	M1.02	U
2	Write any three properties of ammonia refrigerant.	M2.04	R
3	State the function of flash chamber.	M2.02	U
4	What is global warming?	M2.04	R
5	List any three types of rotary compressors.	M3.01	R
6	List out the types of refrigerant flow devices.	M3.04	R
7	What is a psychrometer?	M4.01	U
8	What is Dalton's law of partial pressure?	M4.02	R
9	What is sensible heat factor?	M4.01	U
10	Define absolute humidity and relative humidity.	M4.01	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	An ice plant produces 12 tonnes of ice per day at 0°C using water at room temperature of 20°C. Estimate the power rating of the compressor motor if C.O.P of the plant is 3 and over all electro mechanical efficiency is 90%. OR	M1.04	A
IV	A certain machine works on reversed Carnot cycle between the temperature limits of –10°C and 27°C. Find the mentioned parameters, when working as (i) C.O.P of a refrigerating machine. (ii) C.O.P of a heat pump. (iii) Efficiency of a heat engine	M1.04	A
V	Explain the components of Vapour Compression Refrigeration System with the help of block diagram. OR	M2.02	U
VI	Compare the characteristics of Vapour Compression Refrigeration System and Vapour Absorption refrigeration system.	M2.03	U
VII	Explain the working of reciprocating compressor with the help of a diagram. OR	M3.01	U
VIII	Explain the working of thermostatic expansion valve with the help of a diagram.	M3.04	U
IX	Explain the working of shell and tube type condenser with the help of a diagram. OR	M3.02	U
X	Explain the applications of cryogenic refrigeration.	M3.06	U
XI	Explain the significance of different types of lines used in a psychrometric chart. OR	M4.01	U
XII	Explain the industrial air conditioning system.	M4.04	U
XIII	Explain winter air conditioning system. OR	M4.05	U
XIV	Explain window type air conditioning System.	M4.05	U
