



BRAINWARE UNIVERSITY

Term End Examination 2023-2024 Programme - Dip.ME-2022 Course Name - Refrigeration & Air-Conditioning Course Code - DMEPE401A (Semester IV)

Full Marks: 60 Time: 2:30 Hours [The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.] Group-A (Multiple Choice Type Question) 1 x 15=15 1. Choose the correct alternative from the following: (i) Identify the cycle that air conditioning systems are based in transport aviation. a) Reversed Joule's cycle b) Otto cycle c) Reversed Carnot cycle d) Reversed Brayton cycle (ii) Identify the term refers to C.O.P. of refrigeration. a) Cooling for Performance b) Coefficient of Performance c) Capacity of Performance d) Co-efficient of Plant (iii) Identify the type of compressor is used in domestic refrigerator. a) Centrifugal b) Axial c) Miniature sealed unit d) Piston type reciprocating (iv) Select the component of a refrigeration system that is responsible for compressing the refrigerant. a) Evaporator b) Condenser c) Compressor d) Expansion valve (v) Identify the function of the evaporator in a refrigeration system. a) To transfer heat to the surroundings b) To transfer heat from the space being cooled c) To compress the refrigerant d) To expand the refrigerant (vi) Identify the component of a vapor absorption refrigeration system that is responsible for removing heat from the refrigerant-absorbent mixture. a) Absorber b) Generator c) Condenser d) Evaporator (vii) Identify the property of a refrigerant that is essential for determining its operating temperature range. a) Boiling point

c) Thermal conductivity

(viii) Identify the property of a refrigerant that describes its resistance to flow.

d) Viscosity

b) Specific heat capacity

(ix)	a) Densityc) ViscositySelect the property of a refrigerant that indicate	b) Specific volume d) Enthalpy s its resistance to thermal changes.	
(x)	a) Boiling pointc) EnthalpyChoose the primary purpose of psychrometry.	b) Specific heat capacity d) Saturation pressure	
(xi)	a) Study of human behaviorc) Study of air and its propertiesChoose the term used to describe the total heat	b) Study of psychological disordersd) Study of soil propertiescontent of air.	
(xii)	a) Sensible heatc) Specific heatIdentify the refrigerant pressure at the outlet of	b) Latent heat d) Enthalpy a compressor.	
(xiii)	a) Suction pressurec) Critical pressureChoose the following is a CFC refrigerant	b) Discharge pressure d) Back pressure	
(viv)	a) R 744 c) R 718 Identify the device that is NOT a type of expansi	b) R 502 d) R 290	
	a) Thermostatic expansion valve c) Float valve Select the refrigerant flow control device that is	b) Electronic expansion valve d) Manual expansion valve	
	a) Thermostatic expansion valvec) Float valve	b) capillary tube d) Orifice plate	
Group-B (Short Answer Type Questions) 3			3 x 5=15
 Define refrigeration effect. Explain the term coefficient of performance (COP) in refrigeration. Describe about any three suitable physical property of refrigerant. Sketch P-h and T-s diagram of vapour compression refrigeration cycle. Explain the working on solenoid valve. OR Explain the working of a water coolers.			(3) (3) (3) (3) (3)
Group-C			
		p-C	(3)
			(3) 5 x 6=30
8.	Grou (Long Answer Ty Describe the advantages and disadvantages of air Explain the various components of steam jet refri	pe Questions) cooled condenser.	
8.	Grou (Long Answer Ty Describe the advantages and disadvantages of air	pe Questions) cooled condenser. geration system and clearly discuss the suction = 1600 kJ/kg, enthalpy at	5 x 6=30 (5) (5) (5)
8.9.10.11.	Group (Long Answer Ty Describe the advantages and disadvantages of air Explain the various components of steam jet refri function of each component. For simple vapour compression cycle, enthalpy at discharge from the compressor = 1800 kJ/kg, ent	pe Questions) cooled condenser. geration system and clearly discuss the suction = 1600 kJ/kg, enthalpy at halpy at exit from condenser = 600 kJ/kg ystem. live with neat diagram. bulb temperature ii) Wet bulb	5 x 6=30 (5) (5) (5)
