Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U7806

B.E./B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

21MEV806- REFRIGERATION AND AIR CONDITIONING

Mechanical Engineering

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1.	Explain the term “refrigeration effect.”	CO1- U	
2.	Name any two commonly used refrigerants and their applications.	CO1- U	
3.	Describe the working principle of a reciprocating compressor.	CO1- U	
4.	Explain the term “superheating.”	CO1- U	
5.	Functions of a Humidifier in Air Conditioning.	CO1- U	
6.	Role of Humidifiers in Winter Air Conditioning.	CO1- U	
7.	Differentiate between summer and winter air conditioning.	CO1- U	
8.	State the main components of a split air conditioning system and their roles.	CO1- U	
9.	Explain the working principle of a vapour absorption refrigeration system.	CO1- U	
10.	State the principle of Steam Jet Refrigeration System.	CO1- U	

PART – B (5 x 16= 80 Marks)

11.	(a)	Describe the different types of vapour compression refrigeration cycles.	CO1- U	(16)
		Or		
	(b)	Differentiate between the ideal and actual vapour compression refrigeration cycles.	CO1- U	(16)
12.	(a)	Explain the working of a rotary compressor and compare it with a reciprocating compressor in terms of efficiency, size, and applications.	CO1- U	(16)
		Or		

	(b)	Compare the application of water-cooled vs. air-cooled condensers.	CO1- U	(16)
13.	(a)	Apply the various psychrometric processes (sensible heating, sensible cooling, humidification, dehumidification, adiabatic mixing, evaporative cooling) with neat sketches on a psychrometric chart.	CO3- App	(16)
		Or		
	(b)	Investigate the effect of humidity on the density of moist air by computing the vapour density for an air-water vapour mixture at 26°C and relative humidity of 0,50,100 percent .Also , for each case, compare the values of the degree of saturation to the values of relative humidity.	CO3- App	(16)
14.	(a)	Explain the working principle of a Summer Air Conditioning System with a neat sketch.	CO4-U	(16)
		Or		
	(b)	With a neat sketch, explain the working of a Split Air Conditioning System.	CO4-U	(16)
15.	(a)	Explain the construction and working of a vapour absorption refrigeration system with neat diagram.	CO4-U	(16)
		Or		
	(b)	Discuss the application of vapour absorption refrigeration in ice plant with neat diagram..	CO4-U	(16)