NAVRACHANA UNIVERSITY

School: School of Engineering and Technology
Program/s: B.Tech MECHANICAL ENGINEERING
Year: 3rd   **Semester:** 5th
Examination: End Semester Examination
Examination year: November - 2023

Course Code: ME314   **Course Name:** ENERGY CONVERSION-1   **Total Marks:** 40
Date: 21/11/2023   **Total Pages:** 1
Time: 1.00 pm to 3.00 pm

Instructions:

→ Ph Chart and Psychometric chart is allowed, write Roll No on top right corner.
→ Use of a calculator is permitted.

Q. No.	Details	Marks	COs*	BTL#
Q.1 (a)	Explain Thermoelectric refrigeration system with the working principle and its advantage and disadvantage.	(12)	CO1, CO3	BT1, BT2, BT3
(b)	Explain Cascade refrigeration system with neat sketch.			
Q.2	**Attempt any Two** a) Discuss difference between Isentropic and Isenthalpic expansion. b) Explain Vapor Absorption refrigeration system with sketch. c) Discuss desirable properties of any refrigerant how Ammonia is different from other refrigerants?	(12)	CO1, CO3	BT1, BT2, BT3
Q.3	An air-conditioning system is working between temperature range of 10 degC and 70 degC; determine the Carnot COP of the system. If the relative efficiency of the system is 80%, what will be the actual COP of the system?	(4)	CO1, CO3	BT1, BT2, BT3
Q.4	A R134a based vapor compression refrigeration is working between absolute pressure of 4 bar and 20 bar and having 10 degree of sub-cooling and superheating. If the mass flow of the refrigerant is 0.5 kg/s determine the ton of refrigeration, heat rejected and coefficient of performance of the system. Attach P-h diagram showing the cycle.	(12)	CO4	BT1, BT2, BT4

************End of Question Paper************