

Reg.No. _____

**Karunya UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : 14ME3013
Sub. Name : Solar Refrigeration and Airconditioning

Semester : 2016-17 ODD
Duration : 3hrs
Max. marks : 100

Use of approved refrigeration charts and tables are permitted

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	With the help of schematic, pressure enthalpy and temperature entropy plot, explain the working principle of a vapour compression cycle.	CO1	20
(OR)				
2.	a.	Explain the construction and working of a concentrating type solar collector with a neat sketch. List out its merits and demerits.	CO1	20
3.	a.	Determine the coefficient of performance of a solar operated water lithium bromide absorption cooling system for $T_a = 25^\circ\text{C}$, $T_c = 25^\circ\text{C}$, $T_e = 5^\circ\text{C}$, $T_g = 80^\circ\text{C}$, $m_{ss} = 1$ kg/s, $\epsilon_{SHX} = 60\%$.		20
(OR)				
4.	a.	Determine the coefficient of performance of a water lithium bromide absorption cooling system for $T_a = 25^\circ\text{C}$, $T_c = 25^\circ\text{C}$, $T_e = 5^\circ\text{C}$, $T_g = 80^\circ\text{C}$, $m_r = 1$ kg/s, $\epsilon_{SHX} = 80\%$.	CO2	20
5.	a.	Determine the coefficient of performance of an aqua ammonia absorption refrigeration system for the operating conditions; $T_a = 25^\circ\text{C}$, $T_c = 25^\circ\text{C}$, $T_e = -10^\circ\text{C}$, $T_g = 120^\circ\text{C}$, $m_{ss} = 1$ kg/s, $\epsilon_{SHX} = 70\%$.	CO2	20
(OR)				
6.	a.	Determine the coefficient of performance of a solar operated aqua ammonia absorption refrigeration system for the operating conditions; $T_a = 25^\circ\text{C}$, $T_c = 25^\circ\text{C}$, $T_e = -10^\circ\text{C}$, $T_g = 120^\circ\text{C}$, $m_r = 1$ kg/s, $\epsilon_{SHX} = 90\%$.	CO2	20
7.	a.	With neat schematic discuss the working principle and operation of a diffusion absorption refrigeration system.	CO2	20
(OR)				
8.	a.	Explain the salient features of a two stage aqua ammonia absorption cooling system.	CO2	20
<u>Compulsory:</u>				
9.	a.	Describe the construction and working of solar operated thermoelectric cooling system.	CO3	20

ALL THE BEST