Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**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**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14ME2051** | **Duration :** | **3hrs** |
| **Sub. Name :** | **REFRIGERATION AND AIR-CONDITIONING** | **Max. marks :** | **100** |

*Use of approved refrigeration charts and tables are permitted*

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | Marks |
| 1. |  | With the help of schematic, pressure enthalpy and temperature entropy plot, explain the working principle of a vapour compression cycle. | CO1 | 20 |
| (OR) | | | | |
| 2. |  | Explain the construction and operation of a cascade refrigeration system. State its merits and demerits. | CO1 | 20 |
| 3. |  | Describe with the help of a neat sketch how does a water lithium bromide absorption cooling system works. | CO1 | 20 |
| (OR) | | | | |
| 4. |  | Briefly explain about the types of condensers. | CO2 | 20 |
| 5. |  | Explain the terms dry bulb temperature, wet bulb temperature, dew point temperature, specific humidity and relative humidity. | CO3 | 20 |
| (OR) | | | | |
| 6. |  | Using psychrometry charts, determine the wet bulb temperature, dew point temperature, specific humidity, specific enthalpy and specific volume of humid air whose dry bulb temperature is 29ºC and relative humidity is 45% | CO3 | 20 |
| 7. | a. | Draw and explain the comfort chart. | CO4 | 10 |
|  | b. | Explain the factors governing optimum effective temperature. | CO4 | 10 |
| (OR) | | | | |
| 8. |  | A conference room for seating 100 persons is to be maintained at 22ºC dry bulb temperature and 60% relative humidity. The outdoor conditions are 40ºC dry bulb temperature and 27 º C wet bulb temperatures. The various loads in the auditorium are as follows:  Sensible and latent heat loads per person 80 W and 50 W respectively; lights and fans 15000 W; sensible heat gain through glass, walls, ceilings etc. 15000 W. The air infiltration is 20 m3/min and fresh air supply is 100 m3/min. Two-third of recirculated air and one-third of fresh air are mixed before entering the cooling coil. The by-pass factor of the coil is 0.1. Determine room sensible heat factor and apparatus dew point. | CO4 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Discuss any two applications of air-conditioning system. | CO5 | 20 |

ALL THE BEST