University of Mumbai

Examination 2020 under cluster 2 & 5

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester - VIII

Course Code: MEC803 Course Name: Refrigeration and Air Conditioning

Time: 1 hour Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	For a given temperature T1, as the difference between T1 and T2 increases, the COP of a Carnot heat pump
Option A:	Increases
Option B:	Decreases
Option C:	first increases, then decreases
Option D:	first decreases, then increases
Q2.	Bell Coleman cycle is a reversed
Option A:	Rankine cycle
Option B:	Otto cycle
Option C:	Joule cycle
Option D:	Carnot cycle
Q3.	In refrigeration system, the expansion device is connected between the
Option A:	Compressor and condenser
Option B:	Condenser and receiver
Option C:	Receiver and evaporator
Option D:	Evaporator and compressor
Q4.	EER is the ratio of
Option A:	Cooling capacity/ Power input
Option B:	Power input / Cooling capacity
Option C:	Heat input / Work output
Option D:	Work output / Heat input
Q5.	The highest temperature during the cycle, in a vapour compression refrigeration system, occurs after
Option A:	Compression
Option B:	Condensation
Option C:	Expansion
Option D:	Evaporation
Q6.	Which of the following refrigerant has the lowest boiling point ?
Option A:	Ammonia

Option B:	Carbon dioxide
Option C:	Sulphur dioxide
Option D:	R-12
Q7.	The thermostatic expansion valve is also called
Option A:	Constant pressure valve
Option B:	Constant temperature valve
Option C:	Constant superheat valve
Option D:	Constant flow valve
Q8.	In hermetically sealed compressor unit
Option A:	Compressor is sealed
Option B:	Either compressor & Motor is sealed
Option C:	Motor is sealed
Option D:	Compressor & Motor are sealed
Q9.	Which of the following is not a desirable property of a refrigerant?
Option A:	High risibility with oil
Option B:	Low boiling point
Option C:	Good electrical conductor
Option D:	Large latent heat
Q10.	Natural draft cooling towers are mainly used in the
Option A:	Steel industry
Option B:	Alumina industry
Option C:	Fertilizer industry
Option D:	Power stations
Q11.	In aqua-ammonia and Li-Br water absorption refrigeration systems, the refrigerant is respectively
Option A:	Ammonia and water
Option B:	Water and water
Option C:	Ammonia and Li-Br
Option D:	Water and Li-Br
Q12.	In Electrolux Refrigerator, hydrogen gas circulates between
Option A:	Absorber and heat exchanger
Option B:	Evaporator and Condenser
Option C:	Absorber and Evaporator
Option D:	Rectifier and Condenser
Q13.	A thermoelectric refrigeration system requires :
Option A:	A high voltage AC input
Option B:	A low voltage AC input
Option C:	A high voltage DC input

Option D:	A low voltage DC input
Q14.	When the rate of evaporation of water is zero, the relative humidity of the air is
Option A:	0%
Option B:	100%
Option C:	50%
Option D:	75%
Q15.	The temperature of air recorded by a thermometer, when its bulb is surrounded by a wet cloth exposed to the air, is called
Option A:	Wet bulb temperature
Option B:	Dry bulb temperature
Option C:	Dew point temperature
Option D:	Adiabatic temperature
Q16.	The humidification process, on the psychrometric chart is shown by
Option A:	Horizontal line
Option B:	Vertical line
Option C:	inclined line
Option D:	Curved line
Q17.	Sensible Heat gain in an air conditioning system is Proportional to
Option A:	Temperature difference between WBT of air and temperature of a surface/body
Option B:	DBT of air
Option C:	Temperature difference between DBT of air and temperature of a surface/body
Option D:	WBT of air
Q18.	Energy Conservation in the air-conditioning of a building can be achieved by
Option A:	Maximizing Infiltration load
Option B:	Minimization of solar heat gain
Option C:	Maximizing Ventilation Load
Option D:	Energy Conservation is not possible
Q19.	The Effective Room sensible Heat (ERSH) where , RSH is Room Sensible Heat , OASH is Outside air sensible heat and BPF is Bypass Factor is given
Option A:	ERSH = RSH + BPF ÷ OASH
Option B:	ERSH = RSH - BPF × OASH
Option C:	ERSH = RSH - BPF ÷ OASH
Option D:	ERSH = RSH + BPF × OASH
Q20.	The surface temperature of a cooling coil t_s which is below the dew point

	temperature of the supply air is known as
Option A:	Triple point
Option B:	Apparatus dew point or ADP
Option C:	Critical point
Option D:	Boiling point
Q21.	Grand Sensible heat factor (G.S.H.F)is given by where , where T.S.H. is Total Sensible heat, and T.L.H. is Total Latent heat is
Option A:	$GSHF = \frac{T.S.H.}{T.S.H.+T.L.H}$
Option B:	$GSHF = \frac{T.S.H.+T.L.H.}{T.S.H.}$
Option C:	$GSHF = \frac{T.S.H.-T.L.H.}{T.S.H.}$
Option D:	$GSHF = \frac{T.S.H.}{T.S.H.-T.L.H}$
Q22.	Two air streams stream 1 with mass m_{a1} and specific enthalpy h_1 and stream 2 with mass m_{a2} and specific enthalpy h_2 are mixed together adiabatically at constant pressure to form as new stream 3. The specific enthalpy of stream 3 h_3 is given by
Option A:	$h_3 = \frac{m_{a1}.h_1+m_{a2}.h_2}{m_{a1}+m_{a2}}$
Option B:	$h_3 = \frac{m_{a1}.h_2+m_{a2}.h_1}{m_{a1}+m_{a2}}$
Option C:	$h_3 = \frac{m_{a1}+m_{a2}}{m_{a1}+m_{a2}}$
Option D:	$h_3 = \frac{h_1+h_2}{m_{a1}+m_{a2}}$
Q23.	A relative humidity of about _____is maintained for comfort condition for computer room.
Option A:	100%
Option B:	50%
Option C:	20%
Option D:	65%
Q24.	Photographic materials deteriorate fast in
Option A:	High humidity and temperatures

Option B:	Low humidity and temperature
Option C:	High pressure and temperature
Option D:	High humidity and pressure
Q25.	In printing industries control of ____is must
Option A:	Air velocity
Option B:	Humidity
Option C:	Purity of air
Option D:	Temperature of air