

**University of Mumbai**  
**Examination 2020 under cluster 4 (PCE)**

Program: BE Mechanical Engineering

Curriculum Scheme: Rev2012

Examination: Final Year Semester VIII

Course Code: MEC803 and 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.	The cooling system used for supersonic aircraft and rockets is
Option A:	simple air cooling system
Option B:	boot-strap air cooling system
Option C:	reduced ambient air cooling system
Option D:	regenerative air cooling system
Q2.	While designing the refrigeration system of an aircraft, the prime consideration is that the
Option A:	System has high C.O.P.
Option B:	Power per TR is low
Option C:	Mass of refrigerant circulated in the system is low
Option D:	Mass of the refrigeration equipment is low
Q3.	The COP of a domestic refrigerator
Option A:	Is less than 1
Option B:	Is more than 1
Option C:	Is equal to 1
Option D:	Depends upon the make
Q4.	In a pressure enthalpy chart, the space to the left of the saturated liquid line represents
Option A:	Wet vapour region
Option B:	Superheated vapour region
Option C:	Sub-cooled liquid region
Option D:	None of these
Q5.	Which of this refrigerant has zero ODP?
Option A:	R-32
Option B:	R-11
Option C:	R-12
Option D:	R-13
Q6.	How is the evaporation process in VCR cycle carried out.
Option A:	at constant volume
Option B:	at constant pressure
Option C:	at constant enthalpy
Option D:	at constant entropy
Q7.	The expansion device:

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Option A:	Cycles the compressor
Option B:	Controls subcooling
Option C:	Controls superheating
Option D:	Meters Refrigerant
Q8.	The Carnot COP of a VCR is 6 and the cycle COP is 3.89. The refrigeration efficiency is:
Option A:	35.16%
Option B:	154.24%
Option C:	64.83%
Option D:	54.24%
Q9.	What is the value of m,n,p,q of R-124 as per designation system for Refrigerants
Option A:	2,1,0,4
Option B:	2,1,1,4
Option C:	2,1,1,3
Option D:	2,1,4,1
Q10.	The Cycle of Concentration in Cooling tower is directly proportional to
Option A:	Evaporation Loss
Option B:	Liquid to Gas Ratio
Option C:	Blow-down loss
Option D:	Drift Loss
Q11.	Advantage of using analyzer-rectifier in aqua-ammonia absorption system is
Option A:	it makes ammonia-water solution strong
Option B:	it prevents expansion valve from blocking due to ice formation
Option C:	Provide additional heat in system
Option D:	prevents loss of heat
Q12.	Electrolux refrigerator has
Option A:	only one liquid pump
Option B:	only two liquid pumps
Option C:	no liquid pump
Option D:	three liquid pumps
Q13.	The vapour going to condenser is ____ in temperature and ____ in ammonia
Option A:	higher, less
Option B:	higher, richer
Option C:	lower, less
Option D:	lower, richer
Q14.	What is the saturation temperature at the partial pressure of water vapour in the air-water vapour mixture called?
Option A:	Dry bulb temperature
Option B:	Web bulb temperature
Option C:	Dew point temperature
Option D:	Saturation temperature

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Q15.	At 100% relative humidity, the wet bulb temperature is
Option A:	more than dew point temperature
Option B:	same as dew point temperature
Option C:	less than dew point temperature
Option D:	Equal to ambient temperature.
Q16.	Moist air exists at a pressure of 1.01 bar. The partial pressure and saturation pressure of water vapour are 0.01 bar and 0.02 bar respectively. What are the relative humidity and humidity ratio of the moist air,
Option A:	50% and 0.00622
Option B:	100% and 0.0126
Option C:	50% and 0.0126
Option D:	100% and 0.00622
Q17.	A duct is said to be a low velocity duct if the velocity of air in the duct is up to
Option A:	800 meter per minute
Option B:	600 meter per minute
Option C:	1600 meter per minute
Option D:	1200 meter per minute
Q18.	In winter air conditioning, the air
Option A:	Cooled and humidified
Option B:	Cooled and dehumidifies
Option C:	Heated and humidified
Option D:	Heated and dehumidified
Q19.	In summer air conditioning, the air is
Option A:	Cooled and humidified
Option B:	Cooled and dehumidifies
Option C:	Heated and dehumidified
Option D:	Heated and humidified
Q20.	The methods for determination of duct size is
Option A:	Variable pressure method
Option B:	Dynamic regain method
Option C:	Variable velocity method
Option D:	Velocity reduction method
Q21.	The sensible heat factor for auditorium or cinema hall is generally kept as
Option A:	0.6
Option B:	0.8
Option C:	0.7
Option D:	0.9
Q22.	The degree of warm or cold felt by human body depends mainly on
Option A:	Wet bulb temperature

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Option B:	Air pressure
Option C:	Relative pressure
Option D:	Relative humidity
Q23.	The method generally used on large scale to protect milk against bacterial infection is
Option A:	Heat processing
Option B:	Dehydration
Option C:	Canning
Option D:	Pasteurization
Q24.	When the velocity of air passing through the rectangular and circular duct is same, then the equivalent diameter (D) of circular duct for rectangular duct for the same pressure loss per unit length is given by
Option A:	$a+b/ab$
Option B:	$2ab/a+b$
Option C:	$2a/a-b$
Option D:	$2b/a+b$
Q25.	Ice of potable water can crack if frozen at a temperature t lower than
Option A:	-12 C
Option B:	-15 C
Option C:	-20 C
Option D:	-25 C

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<b>Question</b>	<b>Correct Option (Enter either 'A' or 'B' or 'C' or 'D')</b>
Q1.	D
Q2.	D
Q3.	B
Q4	C
Q5	A
Q6	B
Q7	D
Q8.	C
Q9.	B
Q10.	A
Q11.	B
Q12.	C
Q13.	D
Q14.	C
Q15.	B
Q16.	A
Q17.	B
Q18.	C
Q19.	B
Q20.	D
Q21.	C
Q22.	D
Q23.	D
Q24.	B
Q25.	A