University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev 2012
Examination: Fourth Year Semester VII

Course Code: MEC703 Course Name: Mechanical Utility System
Time: 1 hour Max. Marks: 50

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

Q1.	In case of reciprocating pump the pressure energy of a fluid is increased due to _____ of piston
Option A:	zero displacement
Option B:	negative displacement
Option C:	no displacement
Option D:	positive displacement
Q2.	Capital cost is _____ and maintenance cost is _____ of reciprocating pump than centrifugal pump
Option A:	high, low
Option B:	high, high
Option C:	low, high
Option D:	low, low
Q3.	Single acting reciprocating pump gives _____ discharge while the double acting reciprocating pump gives _____ discharge.
Option A:	intermittent, uniform
Option B:	uniform, intermittent
Option C:	uniform, uniform
Option D:	intermittent, intermittent
Q4.	In a single acting reciprocating pump, if discharge, Q is 3.09 m^3 per sec and total head at the beginning of suction and delivery stroke (Hs + Hd) is 45 m then power required to drive the pump is
Option A:	1.36 kW
Option B:	139.05 kW
Option C:	14.56 kW
Option D:	6.86 kW
Q5.	Following is not the type of Centrifugal pump
Option A:	diffuser pump
Option B:	volute pump
Option C:	vortex pump
Option D:	gear pump
Q6.	In centrifugal pump, if velocity of flow (Vf1) at inlet is 4.244 m/s and tangential blade velocity at inlet (u1) is 10.472 then inlet angle of impeller is
Option A:	22. 06 degree
Option B:	67.93 degree
Option C:	2.48 degree

Option D:	88.71 degree
Q7.	The iso-efficiency curves of centrifugal pump help to locate region where the pump would operate at
Option A:	constant efficiency
Option B:	maximum efficiency
Option C:	minimum efficiency
Option D:	zero efficiency
Q8.	Centrifugal pumps are _____to inward flow reaction turbine but it is _____ in action.
Option A:	similar, reverse
Option B:	opposite, same
Option C:	similar, same
Option D:	opposite, reverse
Q9.	In hydraulic head, NPSH is used for the analysis of _____
Option A:	Adiabatic expansion
Option B:	Priming
Option C:	Wear
Option D:	Cavitation
Q10.	NPSH is the difference between _____
Option A:	Suction pressure and vapour pressure
Option B:	Vapour pressure and suction pressure
Option C:	Suction pressure and heat
Option D:	Shaft and head
Q11.	The volume of air delivered by compressor is
Option A:	compressor capacity
Option B:	swept volume
Option C:	Free air delivered
Option D:	volumetric efficiency
Q12.	Which of the following is application of reciprocating air compressor
Option A:	Gas turbine
Option B:	Supercharging of I C Engines
Option C:	Pneumatic Tools
Option D:	Oil Refineries
Q13.	Which is not advantage of multistage compression
Option A:	more uniform torque
Option B:	to reduce cost of compression
Option C:	to reduce work done per kg of air
Option D:	to increase delivery temperature of compressed air
Q14.	If work input to the compressor to be minimum, the compression process should be

Option A:	Isentropic
Option B:	Isothermal
Option C:	Polytropic
Option D:	Isochoric
Q15.	Estimate the intermediate pressure of compressor to compress 1 kg of air from 1 bar and 27 C to 16 bar in 2 stages.
Option A:	16 bar
Option B:	4 bar
Option C:	8 bar
Option D:	2 bar
Q16.	The pressure rise in impeller of centrifugal compressor is _____ the rise in diffuser
Option A:	almost equal to
Option B:	half than
Option C:	greater than
Option D:	less than
Q17.	In centrifugal compressor velocity of flow leaving the impeller is equals to _____ in many cases.
Option A:	Speed of sound
Option B:	half the Speed of sound
Option C:	Double the speed of sound
Option D:	Triple the speed of sound
Q18.	Rotary compressor is best suited for.....
Option A:	Large quantity of air at high pressure
Option B:	Small quantity of air at high pressure
Option C:	Small quantity of air at low pressure
Option D:	Large quantity of air at low pressure
Q19.	Calculate the work done by the centrifugal compressor if the compression is iso thermal and the data given is m = 50 kg/min, T1 = 288 K, pressure ratio = 2
Option A:	1430.10 kJ/min
Option B:	5622.28 kJ/min
Option C:	2864.14 kJ/min
Option D:	3444.34 kJ/min
Q20.	Pump efficiency generally increase with
Option A:	high head
Option B:	specific speed
Option C:	high pressure
Option D:	low head
Q21.	For very high discharge at low pressure such as for flood control and irrigation applications, _____ pump is preferred
Option A:	Reciprocating

Option B:	Centrifugal
Option C:	axial flow
Option D:	mixed flow
Q22.	Casting of a centrifugal pump is designed so as to minimize_____
Option A:	starting time
Option B:	Cavitation
Option C:	friction loss
Option D:	loss of kinetic energy
Q23.	The specific power consumption of non lubricated compressor compared to lubricated type is ____
Option A:	less
Option B:	Same
Option C:	Higher
Option D:	Zero
Q24.	The most efficient method of compressing air is to compress it.....
Option A:	Isothermally
Option B:	Adiabatically
Option C:	Isentropically
Option D:	Isochronically
Q25.	Dust and sludge in a compressed air piping system will cause
Option A:	Nothing
Option B:	high efficiency
Option C:	Corrosion
Option D:	Cavitation

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