Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: MEC 703 and Course Name: Mechanical Utility System

Time: 1hour   Max. Marks: 50

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

Q1.	In a single acting reciprocating compressor, the suction, compression and delivery of air takes place in _____ of the piston.
Option A:	One stroke
Option B:	Two strokes
Option C:	Three strokes
Option D:	Four strokes
Q2.	The compressor capacity with decrease in suction temperature
Option A:	Increases
Option B:	Decreases
Option C:	Remains unaffected
Option D:	May increase or decrease depend on compressor capacity
Q3.	A single stage reciprocating air compressor takes in 8m^3/min of air at 1 bar and 30^0 C and delivers it at 6 bar. The clearance is 5% of the stroke. The expansion and compression are polytropic with the value of n=1.3. Calculate, Power of the compressor.
Option A:	In between 20 W to 30 W
Option B:	In between 10 W to 20 W
Option C:	In between 20 kW to 30 kW
Option D:	In between 10 kW to 20 kW
Q4.	For a compressor least work will be done if the compression is ....
Option A:	Isentropic
Option B:	Isothermal
Option C:	Polytropic
Option D:	Isobaric
Q5.	The volumetric efficiency of a compressor.......
Option A:	Increases with decrease in compression ratio
Option B:	Decreases with decrease in compression ratio
Option C:	Increases with increase in compression ratio
Option D:	Decrease with increase in compression ratio
Q6.	How is the variation of air velocity while passing through impeller followed by

	diffuser in centrifugal compressor?
Option A:	Air velocity goes no increasing in impeller followed by diffuser
Option B:	Air velocity goes no decreasing in impeller followed by diffuser
Option C:	Air velocity increases in impeller and then decreases in diffuser
Option D:	Air velocity decreases in impeller and then increases in diffuser
Q7.	The ratio of actual whirl velocity to the ideal whirl velocity in the centrifugal compressor is called as _____.
Option A:	Velocity factor
Option B:	Slip factor
Option C:	Work factor
Option D:	Velocity coefficient
Q8.	Gas turbines use following type of air compressor
Option A:	Centrifugal type
Option B:	Reciprocating type
Option C:	Lobe type
Option D:	Axial flow type
Q9.	In the axial flow gas turbine, the work ratio is the ratio of
Option A:	Compressor work and turbine work
Option B:	Output and input
Option C:	Actual total head temperature drop to the isentropic total head drop from total head inlet to static head outlet
Option D:	Actual compressor work and theoretical compressor work
Q10.	For flood control and irrigation applications, the pump generally used is
Option A:	Centrifugal type
Option B:	Screw type
Option C:	Axial flow type
Option D:	Reciprocating type
Q11.	The discharge in a reciprocating pump without air vessel is?
Option A:	Pulsating
Option B:	Smooth
Option C:	Lminar
Option D:	Indefinite
Q12.	The minimum net positive suction head required for hydraulic pump is to
Option A:	Prevents cavitation
Option B:	Increase discharge
Option C:	Increase efficiency
Option D:	Increase suction head
Q13.	Displacement pump is classified on the basis of
Option A:	Mechanical operation of principle
Option B:	Type of power
Option C:	Type of service

Option D:	Efficiency
Q14.	In centrifugal pump casing, the flow of water leaving the impeller, is
Option A:	Radial flow
Option B:	Rectilinear flow
Option C:	Free vortex flow
Option D:	Forced vortex flow
Q15.	Motion of a liquid in a volute casing of a centrifugal pump is an example of
Option A:	Rotational flow
Option B:	Radial
Option C:	Forced spiral vortex flow
Option D:	Spiral vortex flow
Q16.	Mechanical efficiency of a centrifugal pump is the ratio of
Option A:	Energy available at the impeller to the energy supplied to the pump by the prime mover
Option B:	Actual work-done by the pump to the energy supplied to the pump by the prime mover
Option C:	Energy supplied to the pump to the energy available at the impeller
Option D:	Manometric head to the energy supplied by the impeller per kN of water
Q17.	High specific speed of a pump implies it is
Option A:	Centrifugal pump
Option B:	Mixed flow pump
Option C:	Axial flow pump
Option D:	Tangential flow
Q18.	The centrifugal pump operates at manometric head 25 m and the discharge is 0.1 cum/s, the overall efficiency is 85 %. The power required to drive the pump is
Option A:	27 to 29 kW
Option B:	25 to 27 kW
Option C:	29 to 31 kW
Option D:	30 to 32 kW
Q19.	The difference in the total head of the pump is called
Option A:	Euler head
Option B:	Manometric head
Option C:	Shaft head
Option D:	Pressure head
Q20.	Even small increase in efficiency of pump could yield significant _____ in power consumption.
Option A:	Saving
Option B:	Losing
Option C:	Failing
Option D:	No Change

Q21.	Doubling the speed of the centrifugal pump will increasing the power consumption by _____ times
Option A:	2
Option B:	4
Option C:	6
Option D:	8
Q22.	Series operation of a centrifugal pump result in
Option A:	High Head
Option B:	Low speed operation
Option C:	Higher discharge
Option D:	Reduced power consumption
Q23.	Vertical type reciprocating compressors are used in the capacity range of _____
Option A:	50 – 150 cfm
Option B:	200 – 500 cfm
Option C:	Above 1000 cfm
Option D:	10 – 50 cfm
Q24.	If the compressor of 200 cfm loads in 10 seconds and unloads in 20 seconds, the air leakage would be_____
Option A:	67 cfm
Option B:	100 cfm
Option C:	10 cfm
Option D:	133 cfm
Q25.	Which of the following parameters are not required for evaluating volumetric efficiency of the compressor?
Option A:	Power
Option B:	Cylinder bore diameter
Option C:	Stroke length
Option D:	FAD