University of Mumbai

Examination 2020 under cluster 4 (PCE)

Program: BE Mechanical Engineering
Curriculum Scheme: Rev2016
Examination: Final Year Semester VII
Course Code: **MEDLO7033** and Course Name: **Pumps, Compressors and Fans**

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 small discharge at high pressure, following pump is preferred
Option A:	Centrifugal
Option B:	Axial flow
Option C:	Mixed flow
Option D:	Reciprocating
Q2.	What is a Fan?
Option A:	It's a device used for lifting the liquid from ground sources to the upper top surface or from one place to another place.
Option B:	It's a device that increases the pressure of a fluid (liquid or gas) by reducing the volume of the fluid.
Option C:	It's a device used to create flow within a fluid, typically a gas such as air.
Option D:	It's a device used for generating the flow of air at substantial pressure
Q3.	With respect to the reciprocating pump which of the statements is incorrect
Option A:	the limiting value of separation pressure head of water is 6.8 m absolute
Option B:	during the suction separation may take place at bottom of suction stroke
Option C:	during the delivery the separation may take place at end of delivery stroke
Option D:	indicator diagram shows variation of pressure head in cylinder in one revolution of crank
Q4.	The percentage slip of a reciprocating pump is
Option A:	$((Q_{th}-Q_a)/Q_{th})*100$
Option B:	$((Q_a-Q_{th})/Q_{th})*100$
Option C:	$((Q_{th}-Q_a)/Q_a)*100$
Option D:	$((Q_a-Q_{th})/Q_a)*100$
Q5.	The discharge through a single acting reciprocating pump is given by (L= length of stroke, A= cross-section area of piston, N= speed of crank)
Option A:	ALN/60
Option B:	ALN/120
Option C:	2ALN/60
Option D:	3ALN/120
Q6.	By fitting an air vessel to the reciprocating pump, there is a saving in work done and subsequently saving of power. The saving in case of a double acting reciprocating pump is
Option A:	84.80%
Option B:	48.80%
Option C:	39.20%

Option D:	88.40%
Q7.	In suction and delivery pipes of a reciprocating pump, maximum head loss due to friction occurs at
Option A:	the beginning of the stroke
Option B:	the middle of the stroke
Option C:	the end of the stroke
Option D:	the beginning and end of the stroke
Q8.	A single acting reciprocating pump running at 50 rpm has a theoretical discharge of 0.007854 m^3/s of water. The suction and delivery heads are 3.5 m and 11.5 m respectively. Calculate power required to run the pump.
Option A:	0.987 kW
Option B:	2.155 kW
Option C:	1.155 kW
Option D:	2.355 kW
Q9.	In the case of a centrifugal pump, cavitation will occur if
Option A:	It operates above the minimum net positive suction head
Option B:	It operates below the minimum net positive suction head
Option C:	The pressure at the inlet of the pump is above the atmospheric pressure
Option D:	The pressure at the inlet of the pump is equal the atmospheric pressure
Q10.	The ratio of power outlet of the pump to the power input to the pump is known as
Option A:	Transmission efficiency
Option B:	Overall efficiency
Option C:	Mechanical efficiency
Option D:	Volumetric efficiency
Q11.	A centrifugal pump is discharging 0.025 m^3/s of water against a total head of 18 m. The diameter of the impeller is 0.4 m and it is rotating at 1440 rpm. The head of a geometrically similar pump of diameter 0.25 m when it is running at 2800 rpm is
Option A:	28.125 m
Option B:	14.0625 m
Option C:	56.25 m
Option D:	42.1875 m
Q12.	For pumping molasses, it is preferable to employ
Option A:	Reciprocating pump
Option B:	Centrifugal pump with double shrouds
Option C:	Centrifugal pump with Open impeller pump
Option D:	Centrifugal pump with Multistage pump
Q13.	Which statement is false for priming?
Option A:	remove air from the impeller and casing
Option B:	completely fill the impeller and casing
Option C:	run the pump satsfactorily

Option D:	lift the water from one place to other
Q14.	The characteristic curves of a centrifugal pump, plots _____ required by the pump.
Option A:	Velocity
Option B:	Pressure
Option C:	NPSH
Option D:	Velocity and pressure
Q15.	If two centrifugal pump which are identical in all respects and each is capable to deliver Q m^3/s against the head of H are connected in series, the resulting discharge is
Option A:	√Q against a head of √2. H
Option B:	Q against a head of 2H
Option C:	2Q against a head of H
Option D:	2Q against a head of 2H
Q16.	Radial centrifugal fan is suitable for
Option A:	High pressure, high flow
Option B:	High pressure, medium flow
Option C:	Medium pressure, high flow
Option D:	Medium pressure, Medium flow
Q17.	What is the purpose of the blower?
Option A:	Decrease air flow
Option B:	Increase air flow
Option C:	Create vacuum
Option D:	Maintain air flow
Q18.	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
Q19.	Surging phenomenon in centrifugal compressor does not depends on
Option A:	Mass flow rate
Option B:	Pressure ratio
Option C:	Change in load
Option D:	Stagnation pressure at the outlet
Q20.	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

Q21.	The speed of the rotary compressor is..............as compared to reciprocating air compressor
Option A:	High
Option B:	Low
Option C:	Equal
Option D:	Very Low
Q22.	Which compressors are suitable for large volume flow rates of above 1200 m^3/min?
Option A:	Centrifugal compressors
Option B:	Axial flow compressors
Option C:	Diaphragm Compressor
Option D:	Reciprocating Compressor
Q23.	In an axial flow compressor, the ratio of pressure in the rotor blades to the pressure rise in the compressor in one stage is known as
Option A:	Work factor
Option B:	Slip factor
Option C:	Degree of reaction
Option D:	Pressure coefficient
Q24.	Axial flow compressor has the following advantage over centrifugal compressor
Option A:	Larger air handling ability per unit frontal area
Option B:	Higher pressure ratio per stage
Option C:	Aerofoil blades are used
Option D:	Higher average velocities
Q25.	A compressor at high altitude will draw.......
Option A:	More power
Option B:	Less power
Option C:	Same power
Option D:	No power

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