

University of Mumbai
Examination 2020 under cluster PCOE

Program: Chemical Engineering
Curriculum Scheme: Rev 2012
Examination: Second Year Semester- III

Course Code: CHC 303
Time: 1 hour

Course Name: Fluid Flow
Max. Marks: 50

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All the Questions are compulsory and carry equal marks.

Q1.	A manometer is used to measure
Option A:	Atmospheric pressure
Option B:	Pressure in pipes and channels
Option C:	Pressure in Venturimeter
Option D:	Difference of pressures between two points in a pipe
Q2.	The specific gravity of a liquid has
Option A:	the same unit as that of mass density
Option B:	the same unit as that of weight density
Option C:	the same unit as that of specific volume
Option D:	no unit
Q3.	The Pascal law states that liquid at rest applies pressure at a point is _____ in all directions.
Option A:	Same
Option B:	Different
Option C:	Not matching
Option D:	Matching but not equal
Q4.	A single column manometer is connected to a pipe containing a liquid of specific gravity 0.75. Find the pressure in the pipe if the area of reservoir is 250 times the area of tube for the manometer reading. The difference in mercury level is 40 cm. On the left limb the fluid is up to the height of 20 cm.
Option A:	10.42 N/cm ²
Option B:	5.21 N/cm ²
Option C:	2.60 N/cm ²
Option D:	1.95 N/cm ²
Q5.	When the flow parameters at any given instant remain same at every point, then flow is said to be
Option A:	steady
Option B:	laminar
Option C:	uniform
Option D:	incompressible
Q6.	Compressible flow is a flow that deals with _____
Option A:	Fluid temperature
Option B:	Fluid pressure
Option C:	Fluid density
Option D:	Fluid geometry
Q7.	The continuity equation is based on the principle of
Option A:	Conservation of Mass

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Option B:	Conservation of Energy
Option C:	Conservation of Momentum
Option D:	Conservation of Force
Q8.	If a liquid enters a pipe of diameter d with a velocity v , what will it's velocity at the exit if the diameter reduces to $0.5d$?
Option A:	v
Option B:	$0.5v$
Option C:	$2v$
Option D:	$4v$
Q9.	Which forces are neglected to obtain Euler's equation of motion from Newton's second law of motion?
Option A:	Viscous force, Turbulence force, Compressible force
Option B:	Gravity force, Turbulence force, Compressible force
Option C:	Body force, Gravity force, Turbulence force
Option D:	Viscous force, Turbulence force, Body force
Q10.	Which of the following assumption is incorrect in the derivation of Bernoulli's equation?
Option A:	The fluid is ideal
Option B:	The flow is steady
Option C:	The flow is incompressible
Option D:	The flow is rotational
Q11.	A fluid with specific gravity 0.85 is flowing through a diameter 250 mm and 150 mm at the bottom and upper ends respectively. Determine the difference in datum head if the rate of flow through pipe is $0.04 \text{ m}^3/\text{s}$. Take pressure at top and bottom as 27 N/cm^2 and 10 N/cm^2 .
Option A:	17.1 m
Option B:	34.2 m
Option C:	10.5 m
Option D:	5.5 m
Q12.	The pitot tube is used for measurement of
Option A:	pressure
Option B:	flow
Option C:	velocity
Option D:	discharge
Q13.	Bernoulli's equation can be derived from the conservation of:
Option A:	Energy
Option B:	Mass
Option C:	Angular momentum
Option D:	Pressure
Q14.	One end of a cylindrical pipe has a radius of 1.5 cm. Water (density = 1000 kg/m^3) streams steadily out at 7.0 m/s . The rate at which mass is leaving the pipe is
Option A:	2.5 kg/s
Option B:	4.9 kg/s
Option C:	7.0 kg/s
Option D:	48 kg/s

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Q15.	Pressure drop in laminar flow is calculated using
Option A:	Darcy-Weisbach Equation
Option B:	Hagen-Poiseulli Equation
Option C:	Ergun Equation
Option D:	Stokes law
Q16.	For turbulent flow, Pressure drop is directly proportional to
Option A:	Velocity
Option B:	Square of the Velocity
Option C:	Square root of the Velocity
Option D:	Cube of the velocity
Q17.	Mach number is defined as
Option A:	The ratio of the speed of fluid to the speed of sound
Option B:	The ratio of the speed of sound to the speed of fluid
Option C:	Product of speed of sound & speed of fluid
Option D:	Addition of speed of sound & speed of fluid
Q18.	Stokes law is valid only when particle Reynolds number is
Option A:	Equal to 1
Option B:	Less than 1
Option C:	Greater than 1
Option D:	Zero
Q19.	Two fluids are flowing through two similar pipes of the same diameter. The Reynold's number is same. For the same flow rate if the viscosity of a fluid is reduced to half the value of the first fluid, the pressure drop will
Option A:	Increase
Option B:	Decrease
Option C:	Remain unchanged
Option D:	Data insufficient to predict relative pressure drop
Q20.	In centrifugal pumps, cavitation occurs, when pressure of the impeller eye or vane becomes
Option A:	Less than atmospheric pressure
Option B:	More than liquid vapor pressure
Option C:	Less than liquid vapor pressure
Option D:	More than atmospheric pressure
Q21.	NPSH is
Option A:	Net Pressure Suction Head
Option B:	Net Positive Suction Head
Option C:	New Positive Suction Head
Option D:	New Pressure Suction Head
Q22.	Power number is ratio of
Option A:	imposed forced to inertial force
Option B:	buoyant force to inertial force

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Option C:	gravitation force to inertial force
Option D:	imposed force to gravitational force
Q23.	What is the ratio of depth of liquid in vessel to the diameter of tank ($H: D$)?
Option A:	1:1
Option B:	2:1
Option C:	3:1
Option D:	4:1
Q24.	The discharge capacity of the reciprocating pump is _____ that of the centrifugal pump.
Option A:	Higher than
Option B:	Lower than
Option C:	Same as
Option D:	unpredictable
Q25.	What is the function of a butterfly valve?
Option A:	On/ off control
Option B:	Flow regulation
Option C:	Pressure control
Option D:	Hydraulic control