University of Mumbai

Examination 2021

Examinations Commencing from 10th April 2021 to 17th April 2021

Program: ___Civil Engineering_____

Curriculum Scheme: Rev2019

Examination: SE Semester III

Course Code: _CEC305 Course Name: Fluid mechanic-I

Time: 2-hour Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	Density of water_____ Kg/m³
Option A:	1500
Option B:	1000
Option C:	2000
Option D:	3000
2.	1 poise_____ NS/m²
Option A:	1/10
Option B:	1/100
Option C:	1/1000
Option D:	1/10000
3.	A real fluid, in which the shear stress is directly proportional to the rate of shear strain or velocity gradient is known as _____ fluid
Option A:	Ideal plastic
Option B:	Non-Newtonian
Option C:	Newtonian
Option D:	Compressible
4.	1 atmospheric pressure _____m of water.
Option A:	14.328
Option B:	16.328
Option C:	15.328
Option D:	10.328
5.	The pressure intensity at a point in a fluid is given by 3.924N/cm^2. find the corresponding height of water at that point
Option A:	8m
Option B:	4m
Option C:	6m
Option D:	3m
6.	A rectangular plane surface is 2m wide and 3 m deep. It lies in vertical plane in water. Determine the total force on the plane surface when its upper edge is horizontal Coincides with water surface.
Option A:	78290N
Option B:	88290N

Option C:	68290N
Option D:	58290N
7.	When a body is immersed in a fluid an upward force is exerted by the fluid on the body. The magnitude of upward force can be determined by _____ principles.
Option A:	Pascal
Option B:	Archimedes
Option C:	Continuity
Option D:	Momentum
8.	A circular plate of diameter 1.5 m which is placed vertically in water in such a way that the center of the plate is 3m below the free surface of water. Find the position of centre of pressure.
Option A:	3.0468m
Option B:	4.0468m
Option C:	5.0468m
Option D:	7.0468m
9.	If flow in which the fluid characteristics like velocity, pressure, density etc.. at a point do not change with time then that type of flow is called
Option A:	Steady
Option B:	Unsteady
Option C:	Compressible
Option D:	Incompressible
10.	If the Reynolds number is less than 2000 the flow is called
Option A:	Laminar
Option B:	Turbulent
Option C:	Both A & B
Option D:	Neither A Nor B
11.	_____ is defined as that type of flow in which the velocity at any given time does not change with respect to space (i.e length of direction of the direction of flow.
Option A:	Non- Uniform Flow
Option B:	Uniform Flow
Option C:	Both A & B
Option D:	Neither A Nor B
12.	The diameter of a pipe at the section 1 and 2 are 10 cm and 15 cm respectively. Find the discharge through pipe if the velocity of water flowing through the pipe at section 1 is 5 m/sec.
Option A:	0.03926 m^3/sec
Option B:	0.3926 m^3/sec
Option C:	1.03926 m^3/sec
Option D:	926 m^3/sec
13.	_____ is defined as a scalar function of space and time such that negative derivative with respect to any direction gives the fluid velocity in that direction.

Option A:	Stream Function.
Option B:	Velocity Potential Function.
Option C:	Laminar
Option D:	Equipotential
14.	A grid obtained by drawing a series of equipotential lines and stream lines is called _____
Option A:	Flow net.
Option B:	Irrotational.
Option C:	Local acceleration.
Option D:	Convective acceleration.
15.	If the total energy at point M is greater than total energy at point N. then direction of flow will be
Option A:	N to M
Option B:	M to N
Option C:	Both A & B
Option D:	Neither A Nor B
16.	If the head of liquid is less than 5 times the depth of orifice, the orifice is called _____orifice
Option A:	Large
Option B:	Small
Option C:	Fully submerged
Option D:	partially submerged
17.	The head of water over a rectangular notch is 900 mm. the discharge is 300 lit/sec. Find the length of notch, when Cd=0.62
Option A:	250 mm
Option B:	350 mm
Option C:	121 mm
Option D:	192 mm
18.	The bottom edge of a notch or top of a weir over which the water flows is known as _____
Option A:	Crest or Sill
Option B:	Vein
Option C:	Both A & B
Option D:	Neither A Nor B
19.	_____ is the flow in which fluid moves radially inwards towards at a point where it disappears at a constant rate.
Option A:	Source.
Option B:	Sink.
Option C:	Uniform.
Option D:	Non-Uniform.
20.	_____ is defined as the ratio of the actual discharge from an orifice to the theoretical discharge from the orifice.
Option A:	Coefficient of Discharge.
Option B:	Coefficient of velocity.

Option C:	Coefficient of contraction.
Option D:	Coefficient of power.

Q2	**Solve any Four out of Six** **5 marks each**
A	Define I) Density, II) Weight density, III) Specific Gravity IV) Kinematic viscosity V) Dynamic viscosity.
B	State and prove Pascal's Law.
C	Define Notch and weirs and their classification.
D	Derive an expression for discharge through rectangular notch.
E	Derive an expression for discharge through orifice.
F	Explain the classification of orifice?

Q3	**Solve any Two Questions out of Three** **10 marks each**
A	Water is flowing through a pipe having Diameter 290mm and 180mm at bottom and upper end respectively. The intensity of pressure at the bottom end is 22.525N/cm^2 and the pressure at the upper end is 10.81N/cm^2. Determine the difference in datum head if the rate of flow through pipe is 50lit/sec.
B	Derive hydrostatic law or derive an expression for pressure variation.
C	Water is flowing in a rectangular channel of 1.2m wide and 0.85 deep. Find the discharge over a rectangular weir of crest length 50 cm, if the head of water over the crest of weir is 20 cm and water from channel flows over the weir. Take Cd = 0.62 Neglect end contraction take velocity of approach into consideration.