These are sample MCQs to indicate pattern, may or may not appeared in Examination

University of Mumbai Online Examination 2020

Program: BE Mechanical Engineering

Curriculum Scheme: Revised 2012

Examination: Second Year, Semester IV CBSGS

Course Code: MEC402 and Course Name: Fluid Mechanics

Time: 1 hour Max. Marks: 50

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

Q1.	If a person studies about a fluids motion where pressure forces are considered, what will you call his domain of study?
Option A:	Fluid dynamics
Option B:	Fluid Mechanics
Option C:	Fluid statics
Option D:	Fluid kinematics
Q2.	Mass density of fluid is defined as
Option A:	Volume of fluid / Mass of fluid
Option B:	Mass of fluid / Volume of fluid
Option C:	Mass of fluid - Volume of fluid
Option D:	Mass of fluid x Volume of fluid
Q3.	In Newtonian fluid: A real fluid in which the shear stress is directly proportional to
Option A:	the rate of shear strain
Option B:	the rate of shear stress
Option C:	the rate of tensile strain
Option D:	the rate of compressive strain
Q4.	In the fluid flows the net force $F_x = (F_g)_x + (F_p)_x + (F_v)_x + (F_t)_x + (F_c)_x$. If the force due to compressibility, F_c is negligible the equation of motion are called
Option A:	Reynolds's equation
Option B:	Navier-Stokes equation
Option C:	Euler's equation
Option D:	Continuity equation
Q5.	Moment of momentum equation is
Option A:	$T = \rho Q[V_2 r_2 + V_1 r_1]$
Option B:	$T = \rho Q[V_2 r_2 - V_1 r_1]$
Option C:	$T = Q[V_2 r_2 - V_1 r_1]$
Option D:	$T = \rho[V_2 r_2 - V_1 r_1]$
Q6.	Which is correct the correct Darcy-Weisbach formula for the loss of head due to friction in pipes?
Option A:	$h_f = \frac{4.f.L.V^2}{dx2g}$
Option B:	$h_f = \frac{4.V^2}{dx2g}$
Option C:	$h_f = \frac{4.f}{dx2g}$

Option D:	$h_f = \frac{4.f.L.V^2}{d}$
Q7.	Pascal's Law states that the pressure or intensity of pressure at a point in a static fluid is
Option A:	unequal in all directions
Option B:	equal in all directions
Option C:	Only along x direction
Option D:	Only along y direction
Q8.	The viscosity is zero, the flow is steady, the flow is incompressible, the flow is irrotational these assumptions are made during derivation of
Option A:	Reynold's equation
Option B:	Bernoulli's equation
Option C:	Momentum equation
Option D:	basic equations of normal shock
Q9.	The force of buoyancy or buoyancy
Option A:	is a vertical force and is equal to the weight of the fluid displaced by the body
Option B:	is a horizontal force and is equal to the weight of the fluid displaced by the body
Option C:	is a vertical force and is equal to the volume of the fluid displaced by the body
Option D:	is a inclined force and is equal to the mass of the fluid displaced by the body
Q10.	A pipe, through which water is flowing, is having diameters, 20cm, and 10cm at the cross-sections 1 and 2 respectively. The velocity of water at section 1 is given 4.0m/s. Find the velocity head at sections 1
Option A:	3.185 m
Option B:	0.815 m
Option C:	2.815 m
Option D:	1.785 m
Q11.	Venturimeter is used for measurement of
Option A:	Temperature
Option B:	Rate of Flow
Option C:	Velocity at point
Option D:	Pressure
Q12.	Compressible flow is that type of flow in which
Option A:	Density is not equal to constant
Option B:	Density is equal to constant
Option C:	Independent of Density
Option D:	Density is zero
Q13.	Major loss in the pipes because of
Option A:	Sudden expansion of pipe
Option B:	Sudden contraction of pipe
Option C:	friction
Option D:	Bend in pipe
Q14.	The velocity vector in a fluid flow is given as $V = x^2yi + y^2zj - (2xyz + yz^2)k$. Find the velocity of a fluid particle at (2,1,3)
Option A:	33.95 units

Option B:	21.59 units
Option C:	25.59 units
Option D:	28.95 units
Q15.	A stream function is given by $\psi = 5x - 6y$. Calculate the magnitude of resultant velocity
Option A:	5.81 unit/sec
Option B:	7.81 unit/sec
Option C:	9.81 unit/sec
Option D:	10.81 unit/sec
Q16.	1/7 th power law of velocity distribution for smooth pipes
Option A:	$\frac{u}{u_{max}} = \left(\frac{y}{R}\right)^{1/7}$
Option B:	$\frac{u_{max}}{u} = \left(\frac{y}{R}\right)^{1/7}$
Option C:	$\frac{u}{u_{max}} = \left(\frac{y}{R}\right)$
Option D:	$u\ x\ u_{max} = \left(\frac{y}{R}\right)^{1/7}$
Q17.	Sink flow is the flow in which fluid moves
Option A:	radially inwards towards a point where it disappears at a constant rate
Option B:	radially outwards from a point where it disappears at a constant rate
Option C:	radially inwards towards a point where it disappears at variable rate
Option D:	radially outwards from a point where it disappears at a variable rate
Q18.	The Bernoulli's equation for real fluids between points 1 and 2 is given by
Option A:	$\frac{p_1}{\rho g} + \frac{v^2{}_1}{2g} + z_1 = \frac{p_2}{\rho g} + \frac{v^2{}_2}{2g}$
Option B:	$\frac{p_1}{\rho g} + z_1 = \frac{p_2}{\rho g} + \frac{v^2{}_2}{2g} + z_2$
Option C:	$\frac{p_1}{\rho g} + \frac{v^2{}_1}{2g} + z_1 = \frac{p_2}{\rho g} + \frac{v^2{}_2}{2g} + z_2 + h_L$
Option D:	$\frac{v^2{}_1}{2g} + z_1 = \frac{v^2{}_2}{2g} + z_2 + h_L$
Q19.	The flow of a fluid along a curved path or the flow of a rotating mass of fluid is known as a
Option A:	Vortex flow
Option B:	Steady flow
Option C:	Unsteady flow
Option D:	Uniform flow
Q20.	Momentum thickness is given by
Option A:	$\theta = \int_0^{\delta} \frac{u}{U}\left(1 - \frac{u}{U}\right) dy$
Option B:	$\theta = \int_0^{\delta} \left(1 - \frac{u}{U}\right) dy$

Option C:	$\theta = \int_0^{\delta} \frac{u}{U}\left(1 - \frac{u^2}{U^2}\right) dy$
Option D:	$\theta = \int_0^{\delta} \frac{u}{U}\left(1 - \frac{u}{U}\right)^2 dy$
Q21.	An orifice is known as large orifice when the head of liquid from the center of orifice is
Option A:	More than 10 times the depth of orifice
Option B:	Less than 10 times the depth of orifice
Option C:	Less than 5 times the depth of orifice
Option D:	More than 5 times the depth of orifice
Q22.	In which type of flow parameter such as velocity is function of time and one space co-ordinate
Option A:	Two dimensional flow
Option B:	One dimensional flow
Option C:	Three dimensional flow
Option D:	Zero dimensional flow
Q23.	Boundary layer thickness (δ) is the distance from the surface of the solid body in the direction perpendicular to flow where the velocity of fluid is equal to
Option A:	Free-stream velocity
Option B:	0.9 times the free-stream velocity
Option C:	0.99 times the free-stream velocity
Option D:	1.99 times the free-stream velocity
Q24.	A flow is said to be Sonic flow if Mach number
Option A:	M = 1.0
Option B:	$M < 1.0$
Option C:	$M > 1.0$
Option D:	No relation between Sonic flow and Mach number
Q25.	Lift force is defined as the force exerted by a flowing fluid on a solid body
Option A:	In the direction of flow
Option B:	Perpendicular to the direction of flow
Option C:	At an angle of 45^0 to the direction of flow
Option D:	At an angle of 60^0 to the direction of flow