

University of Mumbai

Examination 2020

Program: CIVIL Engineering

Curriculum Scheme: Rev2016

Examination: Third Year Semester V

Course Code: CE-C503 and Course Name: Applied Hydraulics

Time: 1 hour

Max. Marks: 50

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

Q1.	Momentum is a _____ quantity
Option A:	Scalar
Option B:	Vector
Option C:	Infinite
Option D:	Zero
Q2.	The equation for impulse is _____
Option A:	$F\Delta t = m\Delta v$
Option B:	$F\Delta t = \mu$
Option C:	$F\Delta t = mT$
Option D:	$F\Delta t = mRT$
Q3.	Impulse Momentum equation is based on
Option A:	Newton's First law of motion
Option B:	Newton's Second law of motion
Option C:	Newton's third law of motion
Option D:	Law of conservation of mass
Q4.	The unit of physical quantity which does not depend on the unit of any other physical quantity is called as
Option A:	independent dimension
Option B:	Fundamental dimension
Option C:	Core dimension
Option D:	Physical dimension
Q5.	What are the dimensions of force?
Option A:	$[M L T^{-2}]$
Option B:	$[M L T^{-1}]$
Option C:	$[M L^2 T^{-2}]$
Option D:	$[M L^2 T^2]$
Q6.	Which of the following quantities has the dimensions $[M^0 L^0 T^0]$
Option A:	Density
Option B:	Stress
Option C:	Strain
Option D:	Strain Rate

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Q7.	A jet of water is striking at the Centre of a curved vane moving with a uniform velocity in the direction of the jet. For the maximum efficiency, the vane velocity is of the jet velocity.
Option A:	one-half
Option B:	one-third
Option C:	two-third
Option D:	three-fourth
Q8.	The force exerted by a jet of water on a stationary inclined plate in the direction of jet is given by
Option A:	$\rho a V^2$
Option B:	$\rho a V^2 \sin^2 \theta$
Option C:	$\rho a V^2 [1 + \cos \theta]$
Option D:	$\rho a V^2 [1 + \sin \theta]$
Q9.	Impact of jet is obtained by the following equation
Option A:	Momentum equation
Option B:	Bernoulli's equation
Option C:	Impulse momentum equation
Option D:	Froude's equation
Q10.	Impulse turbine requires
Option A:	High head and low discharge
Option B:	High head and high discharge
Option C:	Low head and low discharge
Option D:	Low head and high discharge
Q11.	Kaplan turbine is _____
Option A:	Tangential flow
Option B:	Radial flow
Option C:	Axial flow
Option D:	Mixed flow
Q12.	If blades of the axial flow turbine are fixed, these are called
Option A:	Kaplan turbine
Option B:	Propeller turbine
Option C:	Francis turbine
Option D:	Pelton turbine
Q13.	In reaction turbines, the runner utilizes
Option A:	Kinetic energy
Option B:	Potential energy
Option C:	Both kinetic energy and potential energy
Option D:	No energy

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Q14.	Which kind of turbines changes the pressure of the water entered through it?
Option A:	Reaction turbines
Option B:	Impulse turbines
Option C:	Reactive turbines
Option D:	Kinetic turbines
Q15.	Centrifugal pump is a _____
Option A:	Turbo-machinery
Option B:	Flow regulating device
Option C:	Drafting device
Option D:	Intercooling device
Q16.	Turbo-machines work under _____
Option A:	Newtons first law
Option B:	Newtons second law
Option C:	Newtons third law
Option D:	Kepler's law
Q17.	The main function of nozzle is to _____
Option A:	Varying temperatures
Option B:	Pressure variations
Option C:	Load variations
Option D:	Heat variations
Q18.	The main function of centrifugal pumps are to _____
Option A:	Transfer speed
Option B:	Transfer pressure
Option C:	Transfer temperature
Option D:	Transfer energy
Q19.	What is the hydraulic radius for a wide rectangular channel section?
Option A:	3y
Option B:	2y
Option C:	y
Option D:	y/2
Q20.	What is the hydraulic radius for a wide rectangular channel section?
Option A:	0.36m
Option B:	1.36m
Option C:	2.36m
Option D:	3.36m
Q21.	Specific energy in GVF changes only under which of the following conditions
Option A:	Difference between bed slope and slope of energy line
Option B:	Both bed slope and energy slope are equal
Option C:	Presence of bed slope alone
Option D:	Presence of energy slope alone

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Q22.	What happens to the depth of flow when there is an obstruction in the path?
Option A:	Remains the same
Option B:	Increases
Option C:	Decreases
Option D:	Flow stops
Q23.	Which of the following assumptions is true in case of GVF?
Option A:	The flow is not steady
Option B:	The streamlines are parallel
Option C:	Pressure distribution is not hydrostatic
Option D:	Channel has varying alignment and shape
Q24.	Calculate the bed slope of the channel if the slope of the energy line 0.00024 and the length of the back water curve is 104166.67m. Given: $E_1 - E_2 = 3\text{m}$.
Option A:	2.28×10^{-5}
Option B:	3.28×10^{-5}
Option C:	4.28×10^{-5}
Option D:	5.28×10^{-5}
Q25.	The dimensions of a rectangular channel is $3\text{m} \times 2\text{m}$ and the bed slope of the channel is 1 in 1000, calculate the rate of change of depth if the rate of change of specific energy is $2 \times 10^{-5}\text{m}$. Given: $n = 0.010$
Option A:	$1.43 \times 10^{-5}\text{m}$
Option B:	$2.43 \times 10^{-5}\text{m}$
Option C:	$3.43 \times 10^{-5}\text{m}$
Option D:	$4.43 \times 10^{-5}\text{m}$