Program: BE CIVIL Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: CEC 503 and Course Name: Applied Hydraulics

Time: 1 hour

Max. Marks: 50

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

Q1.	What is statement the moment of momentum
Option A:	the resulting torque acting on a rotating fluid is equal to the rate of change of
	moment of momentum
Option B:	the net force acting on a fluid mass is equal to the change in momentum of lay
	per unit time in that direction
Option C:	the change of Velocity is equal to the resulting torque acting on a rotating fluid
Option D:	the rate of change of momentum is equal to the resulting torque acting on a
	rotating fluid
Q2.	Estimate the hydraulic depth for a most economical circular channel section in
	case of maximum velocity.
Option A:	0.2D
Option B:	0.3D
Option C:	0.4D
Option D:	0.5D
Q3.	What is the SI unit of momentum?
Option A:	Kg.m/s
Option B:	Kg. m/s ²
Option C:	Kg. m/s ³
Option D:	Kg.m ²
Q4.	The dimensional formula of coefficient of viscosity is
Option A:	[MLT]
Option B:	[M 'L°T °]
Option C:	$[M^1 L^{-1} T^{-1}].$
Option D:	[MLT ²]
Q5.	Which among the following have same forces acting upon them
Option A:	Geometrical similarity
Option B:	kinematic similarity
Option C:	Dynamic similarity
Option D:	conditional similarity

Q6.	The force exerted by a jet of water having velocity V on a vertical plate, moving
	with a velocity u is given by
Option A:	ρa (V-u) ² *sin ² θ
Option B:	ρа (V-u) ²
Option C:	ρa (V-u)² [1 + cos θ]
Option D:	ρa (V-u) ² [1 - cos θ]
Q7.	A jet of water of diameter 10cm strikes a flat plate normally with a velocity of
	15m/s. The Plate is moving with a velocity of 6m/s in the direction of the jet and
	away from the jet. What will be the force exerted by the jet on the plate?
Option A:	789.15 N
Option B:	859.35 N
Option C:	974.12 N
Option D:	636.17 N
Q8.	The force exerted by a jet of water on an unsymmetrical moving curved plate
	when jet strikes tangentially at one of its tips is
Option A:	ρΑV (V _{w1} +V _{w2})
Option B:	ρΑV _{r1} (V _{w1} +V _{w2})
Option C:	ρV _{r1} (V _{w1} +V _{w2})
Option D:	AV _{w1} (V _{r1} +V _{r2})
Q9.	The force exerted by a jet on a curved plate is
Option A:	Less than that on flat plate
Option B:	Equal to that on a flat plate
Option C:	More than that on a flat plate
Option D:	Sometime more and sometimes less than that on a flat plate
Q10.	jet after striking a smooth plate comes out with a velocity.
Option A:	Increased
Option B:	Decreased
Option C:	Same
Option D:	Zero
Q11.	The velocity of the flow through the Kaplan turbine is 25m/s. The available head
	of the turbine is 60m. Find the flow ratio of the turbine (take $g=10m/s^2$).
Option A:	0.65
Option B:	0.72
Option C:	0.69
Option D:	0.23
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Q12.	In the outlet velocity triangle of a Kaplan turbine, $\beta_2 = 30^\circ$, $V_{f_2} = 5$ m/s. What is
	the relative velocity, V_{r2} of the flow at outlet?
Option A:	10m/s
Option B:	5.77m/s
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Option C:	8.66m/s
Option D:	2.88m/s
Q13.	Which of the following is an impulse turbine?
Option A:	Pelton turbine
Option B:	Francis turbine
Option C:	Kaplan turbine
Option D:	Propeller turbine
Q14.	Inward radial flow reaction turbine is a turbine in which water flows across the
	blades of runner
Option A:	Radial direction
Option B:	Radially inward
Option C:	Radially outward
Option D:	Axial direction
Q15.	In inward radial flow reaction turbine the ratio of tangential wheel at inlet to
	given velocity of jet is known as
Option A:	Speed ratio
Option B:	Flow ratio
Option C:	Discharge
Option D:	Radial discharge
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Q19.	find the head developed by one pump. If N= 800 rpm, N _s = 25, Q = $0.16m^3/s$, total
	head=89 m
Option A:	29.94 m
Option B:	31.45 m
Option C:	45.78m
Option D:	54.78 m
Q20.	Calculate the mean hydraulic radius for a channel having 20m ² cross sectional
	area and 50m of wetted perimeter.
Option A:	0.4 m
Option B:	0.5 m
Option C:	0.6 m
Option D:	0.7 m
Q21.	A circular channel has diameter 0.6 m. Calculate the depth of channel (d) and
	hydraulic mean depth (m) for maximum velocity.
Option A:	d= 0.486 m & m= 0.18 m
Option B:	d= 0.686 m & m= 1.18 m
Option C:	d= 1.686 m & m= 2 m
Option D:	d= 0.286 m & m= 0.08 m
Q22.	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
Q23.	For a given specific energy E, the critical depth Yc for a rectangular channel is
	given by
Option A:	$V_{c} = \frac{3}{2}F$
	$IC = \frac{1}{2}E$
Option B:	$Y_{C} = \frac{2}{-E}$
Option C:	$Yc = \frac{4}{\pi}E$
Ontion D:	3
Option D.	$Yc = \frac{1}{5}E$
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Q24.	Flow through venture flume is maximum when the depth at the throat is
Option A:	Half
Option B:	One-third
Option C:	Two-third
Option D:	Equal to the total energy of flow
Q25.	What is the Froude's number for a channel having mean velocity 5.65 m/s and
	mean hydraulic depth of 4m?
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Option A:	0.7 m
Option B:	0.65 m
Option C:	0.8 m
Option D:	0.9 m