Program: BE CIVIL Engineering

Curriculum Scheme: Revised 2012

Examination: Third Year Semester VI

Course Code: CEC 603 and Course Name: Applied Hydraulics II

Time: 1 hour Max. Marks: 50

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

Q1.	_____ is defined as the distance measured perpendicular to the boundary of the solid body, by which the boundary should be displaced to compensate for reduction in kinetic energy of the fluid due to formation of boundary layer.
Option A:	Momentum Thickness
Option B:	Energy Thickness
Option C:	Displacement Thickness
Option D:	Boundary layer Thickness
Q2.	In which type of flow the flow characteristics of a channel do not change with time at any point?
Option A:	Steady flow
Option B:	Uniform flow
Option C:	Laminar flow
Option D:	Turbulent flow
Q3.	The boundary layer separation takes place if
Option A:	Pressure gradient is zero
Option B:	Pressure gradient is positive
Option C:	Pressure gradient is negative
Option D:	Does not depends o Pressure gradient
Q4.	The turbulent boundary layer is a _____
Option A:	Non-uniform with swirl
Option B:	Uniform
Option C:	Less stable
Option D:	Smooth
Q5.	Drag force is mathematically expressed as
Option A:	$F_D = ½ \rho U^2 \times C_D \times A$
Option B:	$F_D = \rho U^2 \times C_D \times A$
Option C:	$F_D = 2 \rho U^2 \times C_D \times A$

Option D:	$F_D = 3/2\ \rho U^2 \times C_D \times A$
Q6.	Calculate the hydraulic radius in case of maximum velocity if the radius of the section is 8m.
Option A:	7.87m
Option B:	6.87m
Option C:	5.87m
Option D:	4.87m
Q7.	A flat plate 1.5m x 1.5m moves at 50kmph in stationary air of density 1.15kg/m^3. If the coefficient of drag and lift are 0.15 and lift are 0.75 respt. Determine the power required to keep the plate in motion (KW)
Option A:	0.52
Option B:	0.65
Option C:	0.47
Option D:	0.6
Q8.	Determine the value of manning's constant (N) for a rectangular channel if Chezy's constant (C) is equal to 50 and the depth and widths of the channel are 4m and 7m respectively.
Option A:	0.012
Option B:	0.022
Option C:	0.032
Option D:	0.042
Q9.	For a rectangular section to be most efficient:
Option A:	b = d
Option B:	b = 2d
Option C:	b = d/2
Option D:	d = 3b/2
Q10.	The hydraulic jump always occurs from
Option A:	Below critical depth to above critical dept
Option B:	Above critical depth to below critical depth
Option C:	Below critical depth to above normal depth
Option D:	Above normal depth to below normal depth
Q11.	Calculate the conveyance (K) of a rectangular channel having depth 0.5m, width 0.8m and C = 50.
Option A:	$6.42 m^3/s$
Option B:	$7.42 m^3/s$
Option C:	$8.42 m^3/s$
Option D:	$9.42 m^3/s$
Q12.	A cylinder rotates at 150 RPM with its axis perpendicular in an air stream which is having uniform velocity of 25 m/sec. The cylinder is 1.5m in diameter and 10m

	long. Assuming ideal fluid theory, the circulation (Γ) is equal to
Option A:	55.52 m^2/sec
Option B:	55.25 m/sec
Option C:	50.15 m^2/sec
Option D:	50.15 m/sec
Q13.	Canals taken off from ice-fed perennial rivers, are known
Option A:	Permanent canals
Option B:	Ridge canals
Option C:	Perennial canals
Option D:	Inundation canals
Q14.	For a circular, the wetted perimeter is given by
Option A:	$\frac{R\Theta}{2}$
Option B:	$3R\Theta$
Option C:	$2R\Theta$
Option D:	$R\Theta$
Q15.	A most economical section is one which for a given cross-sectional area, slope of bed and co-efficient of resistance has
Option A:	Maximum wetted perimeter
Option B:	Maximum discharge
Option C:	Maximum depth of flow
Option D:	Minimum discharge
Q16.	According to Kennedy, the critical velocity (V0) in meters in a channel is the mean velocity which keeps the channel free from silting or scouring. Its value is given by (where m is critical velocity ratio and D is the depth of the channel).
Option A:	V0 = 0.84 mD^0.64
Option B:	V0 = 0.55 mD^0.64
Option C:	V0 = 0.84 mD^0.54
Option D:	V0 = 0.55 mD^0.54
Q17.	The specific energy of a flowing fluid per unit weight is equal to
Option A:	$\frac{p}{w}+\frac{V^2}{2g}$
Option B:	$\frac{p}{w}+h$
Option C:	$\frac{V^2}{2g}+h$
Option D:	$\frac{p}{w}+\frac{V^2}{2g}+h$
Q18.	A kite 0.8m x 0.8m weighing 0.4kgf assumes an angle of 12° to the horizontal. The string attached to the kite makes an angle of 45° to the horizontal. The pull

	on the string is 2.5kgf when the wind flowing at a speed of 30kmph. Find the corresponding coefficient of drag. Density of air is given as 1.25 kg/m^3.
Option A:	0.624
Option B:	0.525
Option C:	0.71
Option D:	0.425
Q19.	Total drag on the body is the sum of _____
Option A:	Pressure drag and velocity drag
Option B:	Pressure drag and friction drag
Option C:	Friction drag and velocity drag
Option D:	Friction drag alone.
Q20.	Lacy derived formula for
Option A:	mean regime velocity in terms of hydraulic mean radius.
Option B:	regime velocity in terms of hydraulic mean radius.
Option C:	regime velocity in terms of Slope.
Option D:	regime velocity in terms of hydraulic Diameter
Q21.	Who is produced a regime sleep formula?
Option A:	Kennedy
Option B:	Lacy
Option C:	Kutter
Option D:	Hagen
Q22.	find the area and wetted perimeter of a rectangular channel 214 m wide, having depth of water 3 m and bed slope as 1 in 1500.
Option A:	13 m^2, 15 m
Option B:	12 m^2, 15 m
Option C:	12 m^2, 10 m
Option D:	14 m^2, 10 m
Q23.	rectangular channel has a depth of 3m and width of 6m. Calculate the hydraulic mean depth of the channel.
Option A:	1.5m
Option B:	2 m
Option C:	1 m
Option D:	0.5 m
Q24.	What is the Froude's number for a channel having mean velocity 5.65 m/s and mean hydraulic depth of 4m?
Option A:	0.7 m
Option B:	0.65 m
Option C:	0.8 m
Option D:	0.9 m

Q25.	The maximum discharge through a circular channel takes place when the depth of flow is equal to
Option A:	0.3 times the diameter
Option B:	0.81 times the diameter
Option C:	0.95 times the diameter
Option D:	0.5 times the diameter