

Program: BE CIVIL ENGINEERING

Curriculum Scheme: Rev 2016

Examination: BE Semester VII

Course Code: CE C703 and Course Name: Water Resources Engineering-II

Time: 2 hour

Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	The wetted perimeter P of a stable channel, having discharge, Q, is proportional to :
Option A:	Q
Option B:	$Q^{(0.5)}$
Option C:	$Q^2$
Option D:	$Q^{(1/4)}$
2.	Which one of the following is not the requirement of an ideal regime condition in Lacey's regime-theory ?
Option A:	the discharge in the channel is constant
Option B:	the channel flows through the same soil grade, as that of the sediment entering the channel from the headworks
Option C:	the sediment grade and its amount entering the channel is constant.
Option D:	the silt grade should consist of clay sized particles.
3.	Leakage through the transverse joints in a gravity dam is prevented by :
Option A:	shear keys
Option B:	key ways
Option C:	water stops
Option D:	joints
4.	The most preferred type of an earthen dam section is the one, in which the:
Option A:	entire embankment is made of one type of soil
Option B:	inner embankment is made of highly porous soil, surrounded by the outer shell of highly impervious soil, both separated by transition filter material of mediocre permeability
Option C:	inner embankment is made of highly impervious soil surrounded by the outer shell of highly pervious soil, both separated by transition filter material of mediocre permeability
Option D:	Both Inner embankment and outer shell of impervious soil.
5.	Pure clayey soils are generally not preferred for the central impervious cores of zoned type of earthen dams, because :
Option A:	clays are susceptible to cracking
Option B:	clays are highly pervious
Option C:	clays are highly impervious
Option D:	Clays are transmission materials

6.	Standard USBR stilling basin-II is useful for energy dissipation at the bottom of the overflow structure, if the approaching Froude number is
Option A:	Less than 4.5
Option B:	More than 4.5
Option C:	Less than 2.5
Option D:	More than 2.5
7.	On flatlands what type of canal alignment is used?
Option A:	Side Slope Canal
Option B:	Contour Canal
Option C:	Watershed Canal
Option D:	Field Channel
8.	In a siphon aqueduct, the worst condition of uplift on the floor occurs when
Option A:	the canal is full and the drainage empty with the water table at drainage bed
Option B:	the canal and drainage are flowing full
Option C:	the canal is empty and the drainage full with the water table at drainage bed
Option D:	the canal is full and the drainage empty with water table below the floor
9.	Point out the choice among the following, which is not a function of a distributary head regulator :
Option A:	it serves as a meter for measuring discharge in the off-taking canal
Option B:	it helps in controlling and regulating supplies in the entire downstream canal network.
Option C:	it serves to control silt entry into the off-taking canal
Option D:	
10.	Tension cracks in gravity dams may sometimes lead to the failure of the structure, by :
Option A:	sliding of the dam at the cracked section
Option B:	overturning about the toe
Option C:	Tensile property of concrete is lost
Option D:	crushing of concrete, starting from the toe

Q2	Solve any Four out of Six	5 marks each
A	Enlist the difference between Low height and high height of gravity dam.	
B	Explain with neat diagram the hydraulic failure of earth dam.	
C	What are different types of spillway? Explain in detail with diagram ANY ONE of the spillway.	
D	Write in details the procedure for design of channel according to Kennedy's theory.	
E	Explain the detailed classification of dams.	
F	Write a short note on: Canal Outlet	

Q3.	Solve any Two Questions out of Three	10 marks each
A	For earth dam of homogeneous section with horizontal filter of 30m from toe. Draw the top flow line. If coefficient of permeability of the soil material used in the dam is $5 \times 10^{-4}$ cm/sec, find the seepage flow per unit length of the dam. Top width = 6m, Bottom width = 146m, free board=2m, total depth 20m, u/s slope = 4:1, d/s slope 3:1	
B	Design the practical profile of a gravity dam of stone masonry, given the following data: RL of base of dam = 1450m RL of FRL = 1480.5m Sp. gravity of the masonry = 2.4 Safe compressive stress for masonry = 1200kN/m <sup>2</sup> Height of the waves = 1m	
C	Explain with neat diagram all the forces acting on Gravity dam	