University of Mumbai

Examinations Summer 2022

Time: 2hour 30 minutes Max. Marks: 80

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Q1.	**Choose the correct option for following questions. All the Questions are compulsory and carry equal marks**
1.	For growing irrigated paddy, the ideal water application method is……
Option A:	drip irrigation
Option B:	flood irrigation
Option C:	zigzag irrigation
Option D:	sprinkler irrigation
2.	Dupuit's assumptions are valid for
Option A:	artesian aquifer
Option B:	confined aquifer
Option C:	leaky aquifer
Option D:	unconfined aquifer
3.	If the intensity of irrigation for Kharif is 45% and that for Rabi is 60%; then the annual intensity of irrigation, is:
Option A:	45%
Option B:	60%
Option C:	100%
Option D:	105%
4.	A hyetograph is a graphical representation of
Option A:	Rainfall intensity and time
Option B:	Rainfall depth and time
Option C:	Discharge and time
Option D:	Cumulative rainfall and time
5.	In case of a flowing well, the piezometric surface_____
Option A:	is always below the ground level
Option B:	is always above the ground level
Option C:	is always at the ground level
Option D:	may be above or below the ground level
6.	One amongst the following is Canal ESCAPE
Option A:	Cutting Escape
Option B:	Scouring Escape
Option C:	Unbalanced Escape
Option D:	Balanced Escape
7.	For no tension to be develop in the gravity dam the eccentricity of the resultant force should be
Option A:	<b/2
Option B:	<b/3
Option C:	<b/4
Option D:	<b/6
8.	Which of the following is not a type of precipitation?
Option A:	Arithmatic
Option B:	Orographic
Option C:	Convective
Option D:	Frontal

9.	Which of the following is a false statement?
Option A:	Canal lining reduces seepage losses
Option B:	Canal lining is a permeable layer
Option C:	Canal lining improves the life of a canal
Option D:	Canal lining improves discharge capacity of a canal
10.	According to Lacey's, what is the proposed shape of regime channel?
Option A:	Hyper-bolic
Option B:	Circular
Option C:	Rectangular
Option D:	Semi-elliptical

	Q. 2	**20 Marks**
	Solve any four Questions out of Six	**5 marks each**
1.	Compare Kennedy and Lacey's theories	
2.	Define the following: aquifer, aquifuge, aquiclude, transmissibility, drawdown, cone of depression.	
3.	Derive the relation between duty, delta and base period. Also find delta for a crop if duty for a base period of 100 days is 1800 ha/cumecs.	
4.	Explain any one type of Automatic rain gauge instrument with sketch.	
5.	Explain in detail with a neat sketch different Zones of Storage of Reservoirs	
6.	Describe hydrograph and hyetograph. Also draw neat diagrams	

	Q. 3	**20 Marks**
	Solve any Two Questions out of Three	**10 marks each**
1.	Using Lacey's theory, design an irrigation channel for the following data: Discharge Q=50 cumecs, silt factor f=1, side slopes = 0.5H:1V	
2.	Describe in detail the failures of an earthen dam, along with neat diagrams	
3.	Given below are the ordinates of a 6h unit hydrograph for a catchment. Calculate the ordinates of direct runoff hydrograph due to a rainfall excess of 4.5	

Time hrs	0	3	6	9	12	15	18	24	30	36	42	48	54	60	69
Flow cumecs	0	25	50	85	125	160	185	160	110	60	36	25	16	8	0

	Q. 4	**20 Marks**
	Solve any Two Questions out of Three	**10 marks each**
1.	Define Precipation. Explain any one type of precipitation and explain different forms of precipitation	
2.	Describe with the help of sketches various types of Cross Drainage Work.	
3.	For a homogenous Earthen Dam with height = 52m and freeboard of 2m, flow net was constructed and following results were obtained. Number of potential drops = 25, Number of Flow Channels = 4. Dam has horizontal filter 40 m in length at itsdownstream end. Calculate discharge per meter length of dam . A) Soil is Iso-tropic andthe co-efficient of permeability of the dam is 3 x 10^-5 m/sec B) Soil is Anisotropic Soilwhere kx = 4 x 10^-4 m/sec and ky = 10^-6 m/sec	