

TE / CIVIL / VI / R19 / FH2022 / WRE / 21/16/22

EXTRA

University of Mumbai
Examinations Summer 2022

QP code: 93489

Time: 2hour 30 minutes Max. Marks: 80

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:	Arithmetic
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 hietograph. 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																																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>Time hrs</td> <td>0</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>15</td> <td>18</td> <td>24</td> <td>30</td> <td>36</td> <td>42</td> <td>48</td> <td>54</td> <td>60</td> <td>69</td> </tr> <tr> <td>Flow cumecs</td> <td>0</td> <td>25</td> <td>50</td> <td>85</td> <td>125</td> <td>160</td> <td>185</td> <td>160</td> <td>110</td> <td>60</td> <td>36</td> <td>25</td> <td>16</td> <td>8</td> <td>0</td> </tr> </table>	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
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Q. 4		20 Marks
Solve any Two Questions out of Three		10 marks each
1.	Define Precipitation. 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 its downstream end. Calculate discharge per meter length of dam . A) Soil is Iso-tropic and the co-efficient of permeability of the dam is 3×10^{-5} m/sec B) Soil is Anisotropic Soil where $k_x = 4 \times 10^{-4}$ m/sec and $k_y = 10^{-6}$ m/sec	