University of Mumbai

Program: **BE CIVIL ENGINEERING**

Curriculum Scheme: Rev - 2016

Examination: TE Semester VI

Course Code: CE-C605 and Course Name: WATER RESOURCES ENGINEERING-I

Time: 2 hour 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.	Which of the following methods of applying water maybe used on rolling land ?
Option A:	check flooding
Option B:	border flooding
Option C:	furrow flooding
Option D:	free flooding
2.	With the increase in supplied irrigation water, the yield of crops:
Option A:	increases continuously
Option B:	decreases continuously
Option C:	increases up to a certain limit, and then becomes constant
Option D:	increases up to a certain limit, and then decreases.
3.	For irrigation purposes, the p-H value of water should be:
Option A:	Between 3 & 6
Option B:	Between 6 & 8.5
Option C:	Between 8.5 & 11
Option D:	More than 11
4.	The method of irrigation used for orchards is
Option A:	Free flooding
Option B:	Border flooding
Option C:	Check flooding
Option D:	Ring Basin flooding
5.	Maximum application rate by sprinklers is limited by
Option A:	the infiltration capacity of soil
Option B:	the prevailing wind velocity
Option C:	the quantity of water available
Option D:	the prevailing humidity and radiation
6.	The duty of irrigation water for a given crop is maximum:
Option A:	on the field
Option B:	at the.head of the main canal
Option C:	at the head of the water-course
Option D:	none of them.

7.	The water which can be utilised by the crops from the soil is called:
Option A:	field capacity water
Option B:	capillary water
Option C:	hygroscopic water
Option D:	kor water
8.	Infiltration rate is always
Option A:	more than the infiltration capacity
Option B:	less than the infiltration capacity
Option C:	equal to or less than the infiltration capacity
Option D:	equal to or more than the infiltration capacity
9.	A rain gauge should preferably be fixed
Option A:	near the building
Option B:	under the tree
Option C:	in an open space
Option D:	in a closed space
10.	In India, rain fall is generally recorded at
Option A:	12noon
Option B:	8 pm
Option C:	8 am
Option D:	4 pm
11.	When is the Hydrograph called as a unit hydrograph?
Option A:	When 1mm of runoff is resulted from a rain fall
Option B:	When 3cm of runoff is resulted from rainfall
Option C:	When 1cm of runoff is resulted from rainfall
Option D:	When 3mm of runoff is resulted from rainfall
12.	What does hydrograph based on day gives?
Option A:	Idea about flood period during the month
Option B:	Idea of rainfall
Option C:	Idea of draught during the year
Option D:	Idea of scarcity of water in the upcoming year
13.	The zone of aeration in a groundwater profile does not include _____
Option A:	capillary zone
Option B:	soil water zone
Option C:	intermediate zone
Option D:	saturation zone
14.	The line joining the static water levels in several wells excavated through a confined aquifer is known as the _____
Option A:	cone of depression
Option B:	piezometric surface
Option C:	perched water-table
Option D:	hypsometric curve

15.	Darcy's law is valid in well hydraulics only if:
Option A:	Reynold's number > 1
Option B:	Reynold's number < 1
Option C:	Reynold's number < 500
Option D:	Reynold's number > 500
16.	Yield of a reservoir represents .
Option A:	The inflow into the reservoir
Option B:	The capacity of the reservoir
Option C:	The outflow demand on the reservoir
Option D:	The optimum value of catchment yield
17.	Water tightness of reservoir basin is investigated under
Option A:	Geological survey
Option B:	Engineering Survey
Option C:	Hydrological Survey
Option D:	Topographical survey
18.	In India, rain fall is generally recorded at
Option A:	12noon
Option B:	8 pm
Option C:	8 am
Option D:	4 pm
19.	The "outlet discharge factor" is the duty at the head of
Option A:	branch canal
Option B:	water course
Option C:	main canal
Option D:	distributory
20.	The kor depth for rice is 190 mm and kor period is 14days. The outlet factor for this will be
Option A:	1172 hectares/m3/sec
Option B:	972 hectares/m3/sec
Option C:	637 hectares/m3/sec
Option D:	837 hectares/m3/sec

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<tr><td>Q2</td><td>Solve any Two Questions out of Three 10 marks each</td></tr>
<tr><td>A</td><td>Define Duty, Delta & base period and derive the relation between the three.</td></tr>
<tr><td>B</td><td>Determine the reservoir capacity for the given condition if the CCA is 45,000ha.Canal lossess are 20% and reservoir losses are 15%
<table>
<tr><th>Crop</th><th>Base period(days)</th><th>Duty at field (ha/cumec)</th><th>Intensity of irrigation(%)</th></tr>
<tr><td>Wheat</td><td>120</td><td>1700</td><td>25</td></tr>
<tr><td>Sugarcane</td><td>360</td><td>1600</td><td>20</td></tr>
<tr><td>Cotton</td><td>180</td><td>1500</td><td>15</td></tr>
<tr><td>Rice</td><td>120</td><td>700</td><td>10</td></tr>
<tr><td>Vegetables</td><td>120</td><td>600</td><td>15</td></tr>
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<tr><td>C</td><td>Explain the necessity of irrigation along with the advantages & disadvantages of irrigation.</td></tr>
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<tr><td>Q3.</td><td>Attempt the following</td></tr>
<tr><td>A</td><td>Solve any Two 5 marks each</td></tr>
<tr><td>i.</td><td>Explain with neat sketch Hydrologic cycle.</td></tr>
<tr><td>ii.</td><td>Define types of aquifers and derive the formula for yield through confined aquifer along with a neat sketch</td></tr>
<tr><td>iii.</td><td>Explain with neat sketch different zones of Reservoir.</td></tr>
<tr><td>B</td><td>Solve any One 10 marks each</td></tr>
<tr><td>i.</td><td>The ordinates of 3-hr UH of catchment are given below:
<table>
<tr><td>Time(hours)</td><td>0</td><td>3</td><td>6</td><td>9</td><td>12</td><td>15</td><td>18</td><td>21</td><td>24</td><td>27</td><td>30</td><td>33</td></tr>
<tr><td>Ordinate of 3-h UH (m^3/sec)</td><td>0</td><td>10</td><td>30</td><td>75</td><td>60</td><td>45</td><td>35</td><td>25</td><td>15</td><td>10</td><td>5</td><td>0</td></tr>
</table>
Derive the 9-h UH by S-Curve method</td></tr>
<tr><td>ii.</td><td>A 30cm well completely penetrates an unconfined aquifer of saturated depth 40m. After a long period of pumping at a steady rate of 1500lpm, the drawdown in two observation wells 25 & 75m from the pumping well were found to be 3.5 and 2.0m respectively. Determine the transmissivity of the aquifer. What is the drawdown at the pumping well?</td></tr>
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