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| **Sr. no** | | **Examples** |
|  | The root zone depth of an irrigation soil has dry weight of 15 kN/m3 and a field capacity of 30%. The root zone depth of a certain crop, having permanent wilting percentage of 8% is 0.8 m. Determine  a) Depth of moisture in the root zone at field capacity  b) Depth of moisture in the root zone at permanent wilting capacity  c) Depth of available water | |
|  | The field capacity of a certain soil is 15% and the moisture content of the soil before irrigation is 8%. Determine the depth up to which the soil profile will be wetted with an application of 60 mm of water. Take the dry unit weight of soil as 15.3 kN/m3 | |
|  | The field capacity of a certain soil is 20% its apparent specific gravity is 1.6. Before applying irrigation water, a wet sample of soil was taken, and its mass was found as 150 gm. The same sample weighed as 136 gm after oven drying. Determine the depth of water that must be applied to irrigate the soil to a depth of 0.9 m. | |
|  | Find the field capacity of a soil for the following data  Root zone depth = 2 m  Existing water content = 5%  Dry density of soil = 15 kN/m3  Water applied to the soil = 500 m3  Water loss due to evaporation and deep percolation = 10%  Area of plot = 1000 m2 | |
|  | A loam soil has field capacity of 22% and wilting coefficient of 10%. The dry unit weight of soil is 15 kN/m3. If the root zone depth is 70 cm, determine the storage capacity of the soil. Irrigation water is applied when moisture content falls to 14%. If the water application efficiency is 75%, determine the water depth required to be applied in the field. | |
|  | During a particular stage of the growth of a crop, consumptive use of water is 2.5 mm/day. Determine the interval in days between irrigations and the depth of water to be applied when the amount water available in the soil is 50% of the maximum depth of available water in the root zone, which is 80 mm. Assume irrigation efficiency to be 60%. | |
|  | After how many days will you supply water to soil in order to ensure sufficient irrigation of the given crop, if  Field capacity of the soil = 28%  Permanent wilting point = 13%  Dry density of soil = 1.3 gm/cc  Density of soil = 1.0 gm/cc  Effective root zone depth = 70 cm  Daily consumptive use of water for the given crop = 12 mm  Readily available water = 50% of available water | |
|  | Compute the reservoir storage efficiency for a 24 h period when 3100 lpm of water are being diverted from the reservoir based on the following data;  Inflow rate in the reservoir = 4420 lpm  Change in storage = 410 m3 (the quantity of water to be removed to restore the initial water level in the reservoir.) | |
|  | 1 cumec of water is pumped into a farm distribution system. 0.8 cumec is delivered to a turn-out, 0.9 km from the well. Compute the conveyance efficiency. | |
|  | 10 cumec of water is delivered to a 32-hectare field, for 4 hours. Soil probing after the irrigation indicates that 0.3 meter of water has been stored in the root zone. Compute the water application efficiency. | |
|  | The depths of penetration along the length of a border strip at points 30 meters apart were probed. Their observed values are 2.0, 1.9, 1.8, 1.6 and 1.5 meters. Compute the water distribution efficiency. | |
|  | Furrow 90 m long and spaced at 75 cm apart are irrigated by an initial furrow stream of 2 liters per second. The initial furrow stream reached the lower end of the field in 50 minutes. The size of the stream then reduced to 0.5 liter per second. The cut back stream continued for 1 hour. Estimate the average depth of irrigation. | |
|  | A Persian wheel with an average discharge of 230 liters per minute irrigates 1-hectare wheat crop in 50 hours. What is the average depth of irrigation? | |
|  | Wheat crop requires 45 cm of irrigation water during 120 days irrigating period. How much land can be irrigated with a flow of 20 litres per second for 22 hours a day? | |
|  | Using Franci’s formula, compute the discharge of a rectangular weir 45 cm long with a head of 12 cm, under the following conditions:   1. With no end contraction. 2. With one end contraction. 3. With two end contractions. | |
|  | A centrifugal pump has a discharge of 38 lps. 1 hectare of potato crop is irrigated in 6 hours. What is the average depth of irrigation? | |
|  | Berseem requires 92 cm of water in 122 days of its irrigating period. How much land will be irrigated with a flow of 30 litres per second for 12 hours daily, assuming that there is no rainfall concentration during the period. | |
|  | A farmer having 10 hectares of land and detailed information are given in below table. The irrigation season is 4 months. Determine the size of irrigation stream from a source which can supply for 8 hours each day during the season. No appreciable rainfall occurs during the period.   |  |  |  | | --- | --- | --- | | **Name of crop** | **Area, ha** | **Total water requirement, cm** | | Wheat | 5 | 45 | | Potatoes | 2 | 50 | | Peas | 1 | 15 | | Mustard | 2 | 10 | | |
|  | Water flows through a contracted rectangular weir 120 cm long to a depth of 30 cm, it then flows along a rectangular channel 150 cm wide and over a second weir which has its length equal to the width of the channel. Determine the depth of water over the second weir. | |
|  | A Cipoletti weir has a breadth of 60 cm at its crest. The head of water flowing over the crest is 30 cm. Determine the discharge. | |
|  | Wheat is to be grown at a certain place, the useful climatological conditions of which are tabulated below   1. Determine the evapotranspiration and consumptive irrigation requirement of wheat crop. 2. Also determine the field irrigation requirement if the water application efficiency is 80 %.   Take crop factor is equal to 0.8.   |  |  |  |  | | --- | --- | --- | --- | | **Month** | **Avg. Monthly Temp. (0C)** | **Avg. Monthly day light hours (%)** | **Effective rainfall (cm)** | | NOV. | 18 | 7.20 | 1.7 | | DEC. | 15 | 7.15 | 1.42 | | JAN. | 13.5 | 7.30 | 3.01 | | FEB. | 14.5 | 7.10 | 2.25 | | |