

Discipline: CIVIL	Semester: 4 th	Name of the Teaching Faculty: <u>Sourajit Mohanty</u>	
Subject: <u>Irrigation Engineering</u>	No of Days/Week Class Allotted: <u>5</u>	Semester From date: <u>14.03.22</u> To date: <u>30.06.22</u>	No of Weeks: <u>75</u>

WEEK	Class Day	Theory Topics
01	1st	Hydrology - Hydrology cycle, Rainfall.
	2nd	Estimation of rainfall, Rain gauge & its types.
	3rd	Concept of catchment area, types, run-off.
	4th	Estimation of flood discharge by Dicken's formulae and its numerical problems.
	5th	Estimation of flood discharge by Ryve's formulae & its numerical problems.
02	1st	Water requirement of crops - Irrigation - Definition, necessity, types, benefits.
	2nd	Crop season, Duty, Delta, base period, and their relationship, & their numerical problems.
	3rd	Overlap allowance, Kharif & rabi crops etc. Gross & culturable command area.
	4th	Intensity of Irrigation, irrigable area, time factor and its numerical problems.
	5th	Flood Irrigation - Definition, types of canal, losses.
03	1st	Loss of water in canals, Perennial Irrigation.
	2nd	Components of Irrigation canal and their functions.
	3rd	Sketches of different canal C/c.
	4th	Classification of canals according to their alignment.
	5th	Various types of Canal lining - Advantages and disadvantages.

WEEK	Class Day	Theory Topics
04	1st	• Water logging and Drainage - Causes and effect of water logging, detection
	2nd	Prevention and remedies of water logging.
	3rd	• Diversion head works and Regulatory structures - Necessity and objectives of diversion head works.
	4th	Weirs and barrages.
	5th	Layout of barrage & Function of barrage
05	1st	Different parts of barrage.
	2nd	Silting & scouring.
	3rd	Function of regulatory structures.
	4th	Types and components of a weir.
	5th	• Cross drainage work:- Definition, Types
06	1st	Aqueduct & its types.
	2nd	Aqueduct with road provision, super passage
	3rd	Super passage, Level crossing with sketch.
	4th	Syphon, Syphon super passage & aqueduct
	5th	Dam - Definition, types, Necessity etc. Gravity dam, spillways.

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Subject: Irrigation Engineering	No of Days/Week Class Allotted: 5	Semester From date: _____ To date _____	No. of Weeks:

WEEK	Class Day	Theory Topics
07	1st	Earthen Dam - types, Description
	2nd	causes of failure and protection measures of earthen dam.
	3rd	Gravity Dam - types, Description,
	4th	causes of failure and protection measures of gravity dam.
	5th	Class Test.
08	1st	Spillway - Definition & necessity.
	2nd	Types of spillway with neat sketch.
	3rd	Types of spillway with neat sketch.
	4th	Revision class - I
	5th	Revision class - II
	1st	
	2nd	
	3rd	
	4th	
	5th	

Discipline:	Semester: 4 th	Name of the Teaching Faculty: Sanghamitra Mohapatra	
Subject: Hydraulic & Irrigation Engg.	No of Days/Week Class Allotted: 5	Semester From date: _____ To date: _____	No. of Weeks:

WEEK	Class Day	Theory Topics
07	1st	Hydrostatic - properties of fluid - density, specific gravity, surface tension.
	2nd	capillarity, viscosity and their uses.
	3rd	Pressure and its measurements - Intensity of pressure, atmospheric pressure, gauge pressure, absolute and vacuum pressure.
	4th	Relationship between atmospheric pressure, absolute pressure and gauge pressure.
	5th	pressure head, pressure gauges, problems on properties of fluid.
08	1st	problems on properties of fluid.
	2nd	problems on properties of fluid.
	3rd	Problems on properties of fluid.
	4th	Pressure exerted on an immersed surface - Total pressure, resultant pressure.
	5th	Expression for total pressure exerted on horizontal and vertical surface.
09	1st	Problems on pressure exerted on an immersed surface.
	2nd	Problems on pressure exerted on an immersed surface.
	3rd	Kinematics of fluid flow - Basic equation of fluid flow and their application.
	4th	Rate of discharge, equation of continuity of liquid flow.
	5th	Total energy of a liquid in motion - potential kinetic & pressure.

WEEK	Class Day	Theory Topics
10	1st	Bernoulli's theorem and its limitations.
	2nd	practical applications of Bernoulli's equation.
	3rd	Flow over Notches & weirs - Notches, Weirs, types of notches and weirs.
	4th	Discharge through different types of notches and weirs and their application.
	5th	Types of flow through the pipes - uniform & non-uniform, laminar & turbulent, steady & unsteady.
11	1st	Reynold's number and its application. Different types of major and minor losses.
	2nd	Numerical problems on losses due to friction using Darcy's equation.
	3rd	Total energy lines & hydraulic gradient lines.
	4th	Flow through the open channels - Types of channel sections - rectangular, trapezoidal.
	5th	Circular section, Discharge formulae - Chezy's eq ⁿ and Manning's equation.
12	1st	Problems on discharge by Chezy's equation.
	2nd	Problems on discharge by Manning's equation.
	3rd	Best economical section and its problems.
	4th	Problems on weirs
	5th	Problems on notches.

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Subject:	No of Days/Week Class Allotted: _____	Semester From date: _____ To date _____	No. of Weeks:

WEEK	Class Day	Theory Topics
13	1st	Pump , Types of pumps .
	2nd	Centrifugal pump - basic principles , operation , discharge , horse power & efficiency .
	3rd	Problems on centrifugal pump .
	4th	Reciprocating pumps - types , operation , discharge , horse power & efficiency .
	5th	Problems on reciprocating pump .
	1st	
	2nd	
	3rd	
	4th	
	5th	
	1st	
	2nd	
	3rd	
	4th	
	5th	