4TH SEM./CIVIL./ 2024(S)

Th-2 Hydraulic and Irrigation Engineering

Full Marks: 80 **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
   a. Define duty, delta and base period ?
   b. Define a dam ?
   c. Define free board ?
   d. Write the assumption made in the derivation of Bernoulli's equation?
   e. Define laminar flow & turbulent flow ?
   f. Define spillway ?
   g. Differentiate between notch & weir ?
   h. What is the scope of irrigation in india ?
   i. What do you understand by 'Total pressure' and 'centre of pressure' ?
   j. How runoff is measured?

2. Answer **Any Six** Questions 6 x 5
   a. Define duty & derive the relationship between Duty, Delta & Base period ?
   b. Describe different types of losses in canal?
   c. Draw the cross section of canals partially cutting & partially in filling ?
   d. Write the necessity and objective of diversion head work .
   e. Calculate the specific weight, Density and specific gravity of one litre of a liquid which weights 7N.
   f. What is canal head works ?. Describe various components of canal head works ?
   g A plate 0.0254mm distant from a fixed plate moves at 61cm/ sec requires a force of $0.2kgf/m^2$ to maintain the speed. Determine the dynamic viscosity between the plate.

3 Estimate the causes of failure of gravity dam. Also the draw the profile of a gravity dam 10

4 Write the necessity and objective of diversion head work. 10

5 What is reciprocating pump ? Describe the principle & working of a reciprocating pump with neat sketch. 10

6 Define different causes & control of water logging . 10

7 What are earthen dams and under what circumstances are they preferred ? Write different types of earthen dams and draw neat sketches showing each types ? 10