

No Preview  
Available

Total No. of Question : [4]

Registration No. :

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**Programme Name : Bachelor of Civil Engineering**  
**Regular T.Y.B.Tech. ESE (A.Y. 2023-24) Sem.V Nov.2023**  
**V SEMESTER ( 2021 BATCH)**  
**201CEL304-Irrigation Engineering**

Duration : [ 11:00 AM - 01:00 PM ]

Date : 29 Nov, 2023

Day : Wednesday

Marks : 50

**Instructions :**

**(Q1) All Questions are compulsory** [20.0]

- (1.1) Explain the drip irrigation method with a neat sketch. Explain its advantages and disadvantages. [7.0]
- (1.2) A water course has a culturable commanded area of 1200 hectares. The intensity of irrigation for crop A is 40% and for B it is 35%. Both the crops being Rabi crops. Crop A has a kor period of 20 days and crop B has a kor period of 15 days. Calculate the discharge of the water course if the depth for crop A is 10 cm and for B it is 16 cm [6.0]
- (1.3) Design a canal using Lacey's theory for the following data : [7.0]  
Discharge  $Q = 30$  cumecs , Silt factor  $f = 1.00$   
Side slope = 0.5 : 1  
Find also the longitudinal slope.

**(Q2) All Questions are compulsory** [10.0]

- (2.1) Draw the layout of a typical diversion headwork and name its various components. [4.0]  
Briefly explain the functions of following components-
  - 1. Divide wall
  - 2. Weir wall
- (2.2) Explain in detail the Bligh's theory used for designing the length and thickness of impervious apron floor. [6.0]

**OR [ 2.2 / 2.3 ]**

- (2.3) Explain what is critical exit gradient and safe exit gradient. Derive the relationships for the same with a neat sketch. [6.0]

**(Q3) All Questions are compulsory** [10.0]

- (3.1) Draw the neat sketches of plan and section of a constant radius arch dam. Explain its main features. [3.0]
- (3.2) What is phreatic line? Explain the method of drawing a phreatic line in case of a homogeneous earth dam provided with a horizontal drainage blanket. [7.0]

**OR [ 3.2 / 3.3 ]**

- (3.3) Explain the functions of following components in case of a zoned embankment earthen dam, with a neat sketch of the same. [7.0]
  - 1. Rock toe
  - 2. Rip Rap layer
  - 3. Horizontal drainage blanket
  - 4. Cut off
  - 5. Chimney filter

(Q4) Attempt any two out of three questions.

[10.0]

- (4.1) Explain how area-elevation curve and elevation- storage curves are prepared? What is the use of these curves in reservoir planning? [5.0]
- (4.2) What are the factors on which the rate of silting of a reservoir depends? Explain with a sketch what are density currents and their role in reservoir sedimentation process. [5.0]
- (4.3) Explain with a neat sketch the following terms ? [5.0]
- i) F.R. L. ii) H. F.L.
  - iii) M.D.D.L. iv) Live storage
  - v) Surcharge storage

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