

B. Tech. Sem – VIII (Civil Engg.) (2014 COURSE) (CBCS) :
WINTER - 2018

SUBJECT-ELECTIVE-III HYDRAULIC STRUCTURES

Day: Friday
Date: 16/11/2018

W-2018-2616

Time: 02.30 PM TO 05.30 PM
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Non programmable **CALCULATOR** is allowed.
- 4) Assume suitable data if necessary.

Q.1 a) What are the functions of under sluices in a diversion head work? Discuss the general requirements of the under sluices. **(05)**

b) What are the characteristics of ideal site for diversion head works. **(05)**

OR

Discuss Khosal's method of independent variables. **(10)**

Q.2 Draw the cross-section of an unlined canal when the channel is in cutting, filling. Explain the technical terms used in canals. **(10)**

OR

Explain the procedure of design of canals by the tractive force approach. **(10)**

Design a unlined canal in alluvial soil by the tractive force approach for a discharge 45 cumecs from the following data.

Bed slope = 1/3000, side slopes 0.5:1

Manning's N=0.022 permissible tractive stress = 0.0025 KN/m²

Q.3 Design sarda type canal fall for the following data **(10)**

full supply discharge $\frac{u/s}{d/s} = 40 \text{ cumecs}$

Full supply level- $\frac{u/s}{d/s} = \frac{118.20m}{116.70m}$

Bed width $\frac{u/s}{d/s} = \frac{26m}{26m}$

Drop = 1.5m

Bed level $\frac{u/s}{d/6} = \frac{116.50m}{115.00m}$

Design floor on Bligh's theory taking coefficient of creep =8. Design only crest, cistern & Impervious floor.

OR

Describe Head regulators & cross regulators with neat & sketch. **(10)**

Q.4 Describe with the help of sketches various types of cross drainage works. **(10)**

OR

Design a canal water wag & drainage waterway for a siphon aqueduct for following data – **(10)**

Discharge of the canal -30 cumecs

Bed width of the canal -18 m

Depth of water in the canal-1.5m

Bed level of the canal -150.00m

High flood discharge of the drainage 450 cumecs

High flood level of the drainage -160.80m

Bed level of drainage 156.00

General ground level 160.00m

P.T.O.

Q.5 Explain guide banks with neat sketch draw its typical layout & cross-section. **(10)**

OR

Write design considerations of groynes. **(10)**

Q.6 What are the ill effects of water logging? **(10)**

OR

Discuss open drain system to control water logging. **(10)**

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