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civil - VIII

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B. Tech. (Sem. VIII) (Main/Back) Examination, April/May - 2011
Civil Engineering

8CE2 Water Resources Engineering - II

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary.) Any data you feel missing suitably be assumed and stated clearly, Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil

2. _____ Nil

UNIT - I

1 Design a Sarda type fall for the following data :

(i) Full supply discharge $\frac{U/S}{D/S} = 35$ cumecs.

(ii) Full supply level $\frac{U/S}{D/S} = \frac{218.30\text{m}}{216.80\text{m}}$

(iii) Full supply depth $\frac{U/S}{D/S} = \frac{1.8\text{m}}{1.8\text{m}}$

(iv) Bed width $\frac{U/S}{D/S} = \frac{26\text{m}}{26\text{m}}$

(v) Bed level $\frac{U/S}{D/S} = \frac{216.50\text{m}}{215.00\text{m}}$

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1

[Contd...

(vi) Drop = 1.5 m

Design the floor by Bligh's theory taking coefficient of creep=8. Check the design by Khosla's theory. Safe exit gradient is $\frac{1}{5}$. Draw a neat sketch of the cross section.

16

OR

1 (a) Differentiate between aqueduct and syphon aqueduct. What are the considerations made in selection of suitable type of cross drainage work ?

8

(b) Briefly discuss the features of design of cross drainage works.

8

UNIT - II

2 (a) Describe the Khosla's theory and derive the expression

$$P = \frac{H}{\pi} \cos^{-1} \frac{2x}{b}$$

8

(b) Compare the Bligh's and Khosla's theories for the design of impervious floor.

8

OR

2 Design a vertical drop weir on Bligh's theory for the following site conditions :

(a) Maximum flood discharge = 3000 cusecs.

(b) HFL before construction = 285.0 m

(c) D/S bed level = 278.0 m

(d) F.S.L. of canal = 284.0 m

(e) Allowable afflux = 1 m

(f) Coefficient of creep = 12

(g) Permissible exit gradient = $\frac{1}{6}$.

Check the design by Khosla's theory.

16

UNIT - III

3 (a) Describe the various forces acting on a gravity dam with neat sketches.

8



- (b) Describe the swedish circle method of slope stability analysis for the upstream side of an earth dam under sudden drawdown condition.

8

OR

- 3 (a) Describe the points of consideration for the selection of site for a dam.

8

- (b) Describe the phreatic line and its importance in an earth dam. Explain the graphical method of drawing flow net in an earth dam.

8

UNIT - IV

- 4 (a) Describe an ogee spilway along with the design criteria of its crest profiles.

8

- (b) Describe the main components of a hydroelectric scheme.

8

OR

- 4 (a) Describe various types of spilways with neat sketches.

8

- (b) Describe the method of assesement of water power potential.

8

UNIT - V

- 5 Describe the environmental impact assesement of a large water resource project.

16

OR

- 5 Write short notes on the following :-

- (i) Reservior sedimentation
- (ii) Watershad management
- (iii) G.I.S.
- (iv) Computer aided irrigation design.

4×4=16

