

I.D. No. 24514

B.Tech. 7th Semester F. Scheme (Civil Engineering-XI)

Examination, May-2014

IRRIGATION ENGINEERING-II

Paper-CE-407-F

Time allowed : 3 hours]

[Maximum marks : 100

Note : (i) *Question No. 1 is compulsory.*

(ii) *Attempt one question from each section.*

(iii) *All questions carry equal marks.*

(iv) *Attempt five questions in all.*

(v) *Assume missing data, if any, suitably.*

1. (a) What are the factors governing the design of guide banks ?
- (b) Name various components of diversion headwork.
- (c) What is the width of launching apron of the guide banks ?
- (d) Briefly describe by silt control devices.
- (e) What are the different types of cross drainage works ?
- (f) Differentiate between aqueduct and super passage.
- (g) What is the purpose of straight glacis fall ?
- (h) What are spillways and how are they are provided ?

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Section-A

2. Design a guide bank required for a bridge on a river for the following data :

Design flood discharge = 50000 cumecs

Silt factor = 1.10

Bed level of river = 130 m

High flood level = 140 m

20

3. What is hydraulic design of a weir ? Explain the design for different components of a weir. 20

Section-B

4. Design a siphon aqueduct for the following data : 20

(a) Discharge of the canal : 25 cumecs.

(b) Bed width of the canal : 20 m

(c) Depth of water in the canal : 1.5 m

(d) Bed level of the canal : 160.00m.

(e) High flood discharge of the drainage: 400 cumecs.

(f) High flood level of the drainage : 160.50m.

(g) Bed level of the drainage : 158.00m.

(3)

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5. What do you mean by flood routing ? Explain the procedure of different methods of flood routing in detail. 20

Section-C

6. Design a 2.0 m Sarda type fall for a canal with the following data :

- (i) Upstream bed level = 105 m
- (ii) Side slopes of channel = 1:1 m
- (iii) Downstream bed level = 101 m
- (iv) Full supply level (upstream) = 107 m
- (v) Bed width (u/s and d/s) = 1.2 m

The canal having a discharge of 20 cumecs. Assume soil is good loam and Bligh's coefficient as 6. 20

7. For a homogeneous earthen dam the following data is given :

- (i) HFL of reservoir = 195 m
- (ii) Upstream slope and downstream slope = 3 : 1 and 2 : 1 respectively.

- (iii) Top level of dam = 200 m

Section-D

8. Draw a neat cross section of a earthen dam describing all the components of a dam. Also describe the general design criteria of an earthen dam briefly. 20
9. (a) Briefly explain the design procedure for the standard stilling basin (type I). 10
- (b) Compute the discharge over an ogee spillway with a coefficient of discharge 2.5 at a head of 4 m. the effective length of the spillway is 100 m. Neglect the velocity of approach. 10