

24514

**B. Tech 7th Semester (Civil Engg.)
Examination – May, 2018**

IRRIGATION ENGG. – II

Paper : CE-407-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each of the four Section. Question No. 1 is compulsory.

1. (i) Give criteria for safe design of earth dam.
- (ii) Write down base flood routing equation.
- (iii) Factors governing the design of a weir.
- (iv) Importance of rock toe and relief well.
- (v) Define canal falls. Where these are located ?

- (vi) What is the width of launching apron of the guide bank ?
- (vii) Exit gradient and its importance.
- (viii) The length of water way to design a weir is given by
- (ix) What is the top width of earthen dam ?
- (x) Types of cross drainage works.

SECTION - A

2. What is the hydraulic design of a weir ? How will you design the following components of a weir. 20

- (i) Upstream cut of Floor
- (ii) Protect on works

3. The following hydraulic data pertains to a bridge site of a river : 20

- (i) Maximum discharge = 6000 cusecs
- (ii) Highest Flood level = 106.5 M
- (iii) River bed level = 100 m
- (iv) Average diameter of river bed material = 0.10 mm

Design Bell Band including launching apron to attain the river. Designed neat sectional view of the band with necessary dimension.

SECTION - B

4. Design a vertical drop weir on the basis of Bligh's theory with the help of given data : 20

Maximum flood discharge = 2500 cusecs

HFL before construction of weir = 290 M

River bed level = 288 M

Allowable flux = 1.5 m

Coefficient of creep = 12

Assume any other data of necessary.

5. Derive the expression for bed width (B_x) for any distances from the flumed section of an

(i) aquaduct

(ii) Siphon aquaduct by Mitra's Hyperbolic transition method. 20

SECTION - C

6. Design a 1.8 m Sharda Fall for a canal having a discharge of 15 cumecs with the help of following data :

Bed level = 105 m

Side slope = 1 : 1 m

Bed level Down stream = 105.5 M

Bed width U/S and D/S = 10 m

Assume Biligh's coefficient = 6

Type of soil = good loam

7. With the help of a neat sketch explain the method of drawing top seepage line in a homogeneous dam without any arrangement of drainage. 20

SECTION - D

8. (a) Compute the discharge over an ogee spillway with the coefficient of discharge as 2.5 at the head of 4 m. Effective length of spillway is 100 m. Neglect the velocity of approach. 10
- (b) Draw a neat self-explanatory typical cross-section of a gravity dam. 10
9. Name the various elements to be designed for an earthen dam. Explain the method of designing these elements. 20