

Roll No.

Total Pages : 03

BT-7/D-19

37045

IRRIGATION ENGINEERING-II

CE-403E

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks. Assume any missing data.

Unit I

1. (a) What do you mean by a canal fall ? What are its different types ? Explain trapezoidal notch fall with a neat sketch. **10**
- (b) Why roughening devices are provided in all fall ? Describe them with neat sketches. **10**
2. Design a cross regulator for a distributory channel taking off from a parent channel with the following data :
Discharge of parent canal = 110 cumecs
Discharge of distributory = 28 cumecs
FSL of parent channel, u/s = 115.40 m
FSL of parent channel, d/s = 115.20 m
Bed width of parent channel, u/s = 42 m

Bed width of parent channel, d/s = 38 m
Depth of water in parent channel d/s and u/s = 2.4 m
FSL of distributory = 114.30 m
Bed width of distributory = 12 m
Depth of water in distributory = 1.5 m
Exit gradient = 1/6. **20**

Unit II

3. Design a siphon with the following data : **20**

Canal	Natural Drainage
Full supply discharge = 56 cumecs	High flood discharge = 425 cumecs
Bed width = 32 m	High Flood level = 268.20 m
Canal bed level = 267.00 m	General ground level = 267.20 m
Canal depth = 1.98 m	General bed level of low water × section = 265.5
4. (a) Draw a net layout of diversion head works and various components of it and briefly indicate function of each component. **10**
- (b) Name all corrections used in the Khosla's theory of independent variables. Explain any *two* of them with a suitable example. **10**

Unit III

5. (a) Find the hydrodynamic pressure and moment due to earthquake on a dam with vertical u/s face and depth of water equal to 110 m when intensity of earthquake is 0.22 g. **10**
- (b) Differentiate between elementary profile and practical profile of a gravity dam with suitable diagrams. **10**
6. (a) Define an arch dam. Derive an equation for the most economical angle of an arch dam. **10**
- (b) What are causes of failures of earthen dams ? Discuss them with suitable sketches. **10**

Unit IV

7. (a) What is a Siphon Spillway ? Enumerate component parts of any *one* type of saddle siphon spillways with neat sketch. **10**
- (b) Compute discharge over a spillway with coefficient of discharge = 2.3 at ahead of 3.8 m. The effective length of spillway is 112 m. **10**
8. (a) What do you mean by a spillway gate ? Why these are provided ? Explain Radial gates with neat sketch. **10**
- (b) What is meant by energy dissipators ? Explain any *one* of the USBR stilling basin with a suitable diagram. **10**