

22501

24225

3 Hours / 70 Marks

Seat No.

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- Instructions* –
- (1) All Questions are *Compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answer with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. **Attempt any FIVE of the following:** **10**
 - a) Define dependable yield from a catchment.
 - b) List all the control levels in a reservoir.
 - c) Define spillway and state its function.
 - d) Classify irrigation project based on purpose with one example each.
 - e) State any two ill effects of irrigation.
 - f) Define Base Period and Crop Period.
 - g) Classify dams based on structure.

P.T.O.

2. Attempt any THREE of the following: 12

- a) Define run off and state factors affecting runoff.
- b) Draw area capacity curve and state its significance.
- c) Enlist methods of assessment of irrigation water and explain any one.
- d) Explain Hydrological cycle with the help of a neat sketch.

3. Attempt any THREE of the following: 12

- a) Draw a neat labelled sketch of earthen dam.
- b) Define seepage? Enlist various methods used to reduce seepage in earthen dam.
- c) State advantages and disadvantages of percolation tank. (2 each)
- d) Explain forces acting on Gravity dam.

4. Attempt any THREE of the following: 12

- a) State any four essential requirements of site for construction of bandhara.
- b) Compare drip irrigation and sprinkler irrigation on any four points.
- c) Explain construction and operation of KT weir.
- d) Differentiate between Weirs and Barrages.
- e) Draw a layout of diversion head works showing all the components.

5. Attempt any TWO of the following: 12

- a) The isohyets for annual rainfall over a catchment basin were drawn. The areas of strips between isohyets are indicated below in table. Find average depth of a mud precipitation over the basin.

Isohyets (cm.)	Area (sq.km.)
75-85	580
85-95	2960
95-105	2850
105-115	1000
115-135	610
135-155	160

- b) Find the design discharge of a canal for irrigating the crops as detailed given:

- i) Transit losses = 15%
- ii) Time factor = 0.7
- iii) Capacity factor = 0.8

Sr. No.	Name of Crop	Area under irrigation in Ha	Duty at field in Ha/cumec
1.	Sugarcane	350	700
2.	Rice (Kharif)	150	600
3.	Bajri (Kharif)	600	1500
4.	Wheat (Rabi)	1200	1800
5.	Vegetables (H.W.)	400	800

- c) Derive relation between duty, delta and base period.

6. Attempt any TWO of the following:

12

- a) Classify canals according to alignment and position in canal network.
- b) Draw a layout of Lift Irrigation scheme showing all the components and state the function of each.
- c) Design economical section of canal suitable for following case.
 - i) Discharge = 1.2 cumec
 - ii) Coefficient of rugosity = 0.02
 - iii) Canal in full cutting with side slope = 1.5 : 1.
 - iv) Longitudinal bed slope = 1 in 2000.
