22501

12223

3 Hours / 70 Marks Seat No. | | | | | | | | |

Instructions – (1) All Questions are *Compulsory.*

(2) Answer each next main Question on a new page.

(3) Illustrate your answers 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) State any four benefits of Irrigation.

b) Define Yield and Dependable yield.

c) Define Base period and Crop period.

d) Enlist any four methods of assessment of irrigation water.

e) Enlist any four functions of spillway.

f) Draw a neat sketch of zoned type earthen dam.

g) State any two advantages of Bandhara Irrigation.

Marks

2. Attempt any THREE of the following : **12**

a) Define Rainfall. Explain with neat sketch automatic rain gauge.

b) Define computation of rainfall. Describe thiessans polygon method with suitable sketch.

c) Define silting of reservoir. State factors affecting the rate of silting.

d) Draw a neat sketch of area capacity curve. Describe how to interpret various parameters from this curve.

3. Attempt any THREE of the following : **12**

a) Define Runoff. State the various factors affecting runoff.

b) Define percolation tank and state the points to be considered for selecting the site for percolation tank.

c) Differentiate between sprinkler irrigation and drip irrigation on any four points.

d) Define Hydrology and Explain hydrological cycle.

4. Attempt any THREE of the following : **12**

a) Derive the relationship between Duty, Delta and Base period.

b) Explain the various forces acting on Gravity Dam with neat sketch.

c) Differentiate between Earthen dam and Gravity Dam.

d) Draw a layout of lift irrigation scheme. Explain its functions with component parts.

Marks

5. Attempt any TWO of the following : **12**

a) Calculate the base width of the elementary section of gravity dam from the following data :

Unit weight of concrete = 2480 Kg/m^2

H.F.L. at R.L. = 373.00 M

Coefficient of permeability (K) = 0.3

Coefficient of static friction (μ) = 0.70

b) Draw a neat sketch of Barrage with its components. Enlist any two advantages and disadvantages of it.

c) Fix the control levels DSL, FRL, HFL and TBL from following data :

i) Effective storage required 3000 Ha. M.

ii) Carry over allowances and tank losses – 25%

iii) Dead storage – 10% of gross storage.

Contour RL (m)	580	582	584	610	612	614
Storage (M|m^2)	3.0	4.5	6.0	30	40	50

Assume Flood lift as 1.5 m and free board a 2.5 m.

6. Attempt any TWO of the following : **12**

a) Find the designed discharge of a canal having following details:-

i) Transit losses = 18%

ii) Time factor = 0.7

iii) Capacity Factor = 0.8

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

Marks

b) Calculate the balancing depth for a canal section having the following details :

Bed width (b) = 4m, F.S.D. = 1.5 m,

Top width of bank = 2.5 m,

Side slopes 1.5 : 1 in cutting

Side slopes 2:1 in banking

Free board = 0.5 m.

c) Draw a neat layout of Diversion Head work and write functions of following components of it :

i) Head Regulator

ii) Divide Wall

iii) Fish ladder

iv) Scouring sluices

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