22501

11920

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

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

(2) Figures to the right indicate full marks.

(3) Assume suitable data, if necessary.

(4) Use of Non-programmable Electronic Pocket Calculator is permissible.

(5) 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:

(i) Irrigation

(ii) Runoff

b) Enlist the classification of Irrigation on the basis of purposes.

c) Define:

(i) C.C.A.

(ii) G.C.A.

d) Define spillway and enlist types of spillway.

e) Enlist the types of gates provided to reservoir.

f) Enlist factors affecting on silting of reservoir.

g) State ill effects of excess Irrigation.

Marks

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

a) Describe in brief working of symons rain gauge with neat labelled sketch.

b) Compute the average rainfall over the catchment by thiessens polygon method and arithmetic mean method.

Rain gauge station	A	B	C	D
Area of thiessens polygon (sq. km)	45	38	30	40
Precipitation in mm	30.8	34.6	32.6	24.6

c) Explain the factors affecting duty.

d) Explain in brief engineering surveys carried out for reservoir planning.

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

a) State the reasons for which elementary profile of dam is not possible to construct in practice.

b) Draw labelled sketch of earthen dam.

c) Differentiate between earthen dam and gravity dam with respect to seepage, foundation, construction and maintenance.

d) Explain the requirement of site for percolation tank.

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

a) State the necessity and advantages of drip irrigation scheme.

b) Discuss the different activities undertaken under Jalyukt Shivar Abhiyan.

c) Enlist the types of weir and explain any one in brief.

d) Differentiate between weir and barrage.

e) Draw a layout of diversion head work.

Marks

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

a) (i) Calculate the MFD from catchment area 950 km^2, use Dickens formula [Assume C = 24]

(ii) Explain any three factors affecting runoff.

b) Derive relation between duty and delta.

c) Fix the full reservoir level [F. R. L.] and Top bed level [T. B. L.] from the following data.

(i) Dead Storage level = 112 m

(ii) Crop water requirement = 8500 m^3

(iii) Tank losses = 1500 m^3

(iv) Free board = 1.5 m

(v) Flood lift = 1.6 m

Control R. L. (m)	112	114	116	118	120	122
Capacity (m^3)	1000	2900	5000	6000	9000	12000

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

a) Draw layout of lift irrigation scheme and explain in brief components parts of the same.

b) Design economic trapezoidal section of canal to carry 30m^3/sec of water with bed slope 1m per km and side slope 3H:2V take N = 0.012.

c) Draw neat labelled sketch of following:

(i) Aqueduct

(ii) Super passage

(iii) Level crossing