Scheme – G

Sample Test Paper-I

Course Name : Diploma in Civil Engineering

Course Code : CE/ CR/ CS/ CV **17502**

Semester : Fifth

Subject Title : Irrigation Engineering

Marks : 25 **Time: 1 Hour.**

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q1. Attempt any three **(3 x 3 = 9)**

a) State the meaning of MFD. List any two methods of computing MFD.
b) State three ill effects of irrigation.
c) List any three cropping seasons in Maharashtra. Mention cropping period of each season in days.
d) State three advantages of volumetric mode of assessment of irrigation water.
e) State three type of hydraulic failures of earthen dam.

Q2. Attempt any two **(2 x 4 = 8)**

a) State eight factors affecting runoff.
b) Draw a neat sketch of hydrological cycle. List the components of it.
c) Fix the DSL, FRL by using following data :-
i) Effective storage required for crops = 4000 ha-m
ii) Tank losses are 20% of effective storage
iii) Carryover allowances 10% of effective storage
iv) Dead storage is 10% of GROSS storage

Contour R.L. in m	100	103	106	125	128	131	134
Cumulative Storage in ha-m	370	500	850	4500	5100	5800	7000

Q3. Attempt any two **(2 x 4 = 8)**

a) Draw neat sketches of two types seepage control measures through foundation and body of earthen dam each.
b) Describe two methods of remedial measures for structural failure of earthen dam.
c) Draw a neat sketch of cross section of typical zoned type of earthen dam.

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Sample Test Paper-II

Course Name : Diploma in Civil Engineering

Course Code : CE/ CR/ CS/ CV **17502**

Semester : Fifth

Subject Title : Irrigation Engineering

Marks : 25 **Time: 1 Hour**

Instructions:

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

Q1. Attempt any three **(3 x 3 = 9)**

a) Compare between low dam & high dam on any three points.
b) State three factors considered for selection of site for bandhara.
c) State three purposes of Canal Escape.
d) State the three advantages of drip irrigation scheme.
e) Enlist the six types of materials used in canal lining.

Q2. Attempt any two **(2 x 4 = 8)**

a) Describe the four purposes of providing construction joints in gravity dam.
b) Find the length of spillway for a reservoir for MFD of 2000 m^3/s with head of 2.5 m by using Franci's formula.
c) Design a most economical rectangular canal section carrying discharge of 30 m^3/s of water. The bed slope of canal is 1 in 1800. Assume chezy's constant as 50.

Q3. Attempt any two **(2 x 4 = 8)**

a) What is pick up weir? State three functions of pick up weir.
b) State two causes and two remedial measures of water logging.
c) What is the need of canal falls? Draw a sketch of drop fall.

Scheme – G

Sample Question Paper

Course Name : Diploma in Civil Engineering

Course Code : CE/ CR/ CS/ CV **17502**

Semester : Fifth

Subject Title : Irrigation Engineering

Marks : 100 **Time: 3 Hrs.**

Instructions:

1. All questions are compulsory
2. Illustrate your answers with neat sketches wherever necessary
3. Figures to the right indicate full marks
4. Assume suitable data if necessary
5. Preferably, write the answers in sequential order

Q 1. A) Attempt any THREE **3 x 4 = 12**

a) State any four advantages and four ill effects of irrigation.

b) Classify the irrigation projects based on purpose & based on administration.

c) The following table provides the data for the influence area & rainfall

Influence area in Sq. Km.	160	175	120	150	225
Rainfall in mm	605	758	810	838	557

From above data compute the average annual rainfall by Theissen's Polygon method.

d) State the meaning of

i. Crop Period ii. Base Period iii. Duty iv. Delta

B) Attempt any ONE **1 x 6 = 6**

a) The following table provides the data for annual rainfall for different years

Year	2005	2006	2007	2008	2009	2010
Annual rainfall in mm	620	705	695	715	845	550

Using the above data calculate the dependable rainfall and dependable yield from a catchment area of 250 Sq. Km. Take 75 % dependability and runoff coefficient as 0.6.

b) Fix the DSL, FRL, HFL for a medium size reservoir from the data given below.

Tank losses 15 % of effective storage
Carry over allowance 12.5% of effective storage

Dead storage is 10% of gross storage
Effective storage 30 Mm^3
Flood lift 1.5 m

Contour RL in m	101	104	107	208	208	211
Storage in Mm^3	3.60	4.22	5.50	40.50	45.20	48.60

Q2. Attempt any Four **4 x 4 = 16**

a) State the four factors affecting the rate of silting of reservoir.

b) Draw a neat sketch of Area-Capacity-Elevation curve. Describe how to interpret various parameters from this curve.

c) Write the functions of following components of Earthen Dam

i. COT ii. Pitching iii. Rock toe iv. L-drain

d) State the factors affecting selection of site for gravity dam (Mention eight points).

e) Draw a neat sketch of cross section of Earthen Dam & show all components of it.

f) State the purposes of providing drainage gallery in Gravity Dam.

Q3. Attempt any FOUR **4 x 4 = 16**

a) Compare theoretical profile & practical profile of gravity dam.

b) State the component parts of main spillways and mention one function of each.

c) Draw a labeled sketch of tainter gate. State where is it suitable?

d) Draw layout of Lift irrigation scheme, list the components of scheme.

e) State four limitations of Bandhara Irrigation.

Q4. A) Attempt any THREE **3 x 4 = 12**

a) Describe construction stages of Percolation Tank.

b) Compare between drip irrigation and sprinkler irrigation on any four points.

c) State four types weir. Draw the sketch of any one of them and describe its purpose.

d) Draw a labeled sketch of barrage and write two advantages of barrages.

B) Attempt any ONE **1 x 6 = 6**

a) State the need of drip irrigation. Draw layout of drip irrigation scheme, show various components of it.

b) A canal section has following parameter::

i. Bottom width of Canal is 12m.
ii. Full Supply Depth 1.5m
iii. Bank width 2m
iv. Side slope in cutting 1:1
v. Side slope in filling 2:1
vi. Free board 0.6m

Calculate the balancing depth of the canal.

Q5. Attempt any TWO **2x 8 = 16**

a) A main canal irrigates the following crops.

Name of crop	Base period in Days	Area under crop in ha	Duty in ha/Cumec
Wheat (Rabi)	120	6800	1800
Sugar cane	360	4600	800
Cotton	200	2700	1400
Rice(Kharif)	120	3250	900
Vegetable(HW)	120	1600	700

Design the capacity of canal. Consider canal losses as 15% and capacity factor as 0.8.

b) Compare between Earthen Dam and Gravity Dam w.r.t.

i. Foundation ii. Seepage
iii. Construction material iv. Length of dam
v. Construction Method vi. Cost
vii. Manpower required viii. Maintenance

c) Suggest the suitable type of CD work & draw sketch of it under each of the following situations

i) Canal bed level & Nala bed level are same
ii) Canal bed level is above HFL of Nala
iii) Nala bed level is above FSL of canal
iv) HFL of Nala is in between FSL of canal & bed level of canal

Q6. Attempt any FOUR **4 x 4 = 16**

a) Differentiate between weir & barrage w.r.t.

i. Afflux ii. Crest level iii. Flood control iv. Maintenance

b) Draw a neat sketch of Diversion headwork. Show component parts of it and write the purpose of each.

c) Draw the cross section of canal in full Embankment & full Cutting.

d) Classify canal according to alignment & according to position in canal network.

e) Differentiate between head regulator & cross regulator on any four points.