

Scheme - I
Sample Question Paper

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Fifth
Course Title : Water Resources Engineering
Max. Marks : 70

22501

Time: 3 Hours

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 Attempt any FIVE of the following. **10 Marks**

- a) State any four ill effects of irrigation
- b) List four points considered for selection of site for a rain gauge station.
- c) Define i) Base period ii) Intensity of irrigation
- d) Explain a theoretical profile of a gravity dam
- e) Discuss the importance of an emergency spillway
- f) Draw a neat sketch of Hydrologic cycle
- g) State two silt control measures of reservoir

Q.2 Attempt any THREE of the following. **12 Marks**

- a) Explain any four factors affecting runoff
- b) Draw the area capacity curve and state its significance.
- c) Explain the meaning of i) duty ii) delta iii) GCA iv) crop period. State the unit of each.
- d) Enlist and describe any four methods to improve duty.

Q.3) Attempt any THREE of the following. **12 Marks**

- a) Enlist the types of hydraulic and seepage failures of earthen dam
- b) Describe the concept of low and high gravity dam.
- c) Find the base width of a solid gravity dam with HFL 85.00 m, river bed level at RL of 52.0 m. hard rock at RL 35.0 m. The mass concrete has a specific gravity of 2.4 and the coefficient of friction may be taken as 0.40
- d) State advantages and disadvantages of Percolation tank. (Two each)

Q.4) Attempt any THREE of the following. **12 Marks**

- a) Enlist components of a drip irrigation scheme stating the purpose of each.
- b) State the components and use of the bandhara scheme.
- c) Compare weir with barrage with respect to crest level, afflux, silting, maintenance.

- d) Describe the construction of a K. T. Weir
- e) Draw a neat sketch of a fish ladder and state its purpose.

Q.5) Attempt any TWO of the following.

12 Marks

- a) The analysis of a storm yielded the following information regarding Isohyets. Calculate the average depth of rainfall

Isohyet interval in mm	70-80	80-90	90-100	100-110	110-120	120-130
Area in Km ²	10	85	113	98	136	67

- b) Find the design discharge of a canal irrigating following crops:

Sr No	Crop	Area under irrigation (Ha)	Duty (Ha/cumec)
1.	Sugarcane	1000	500
2.	Rice	300	600
3.	Jowar (Kharif)	1000	2500
4.	Wheat	800	1600
5.	Vegetables(Hot weather)	300	600

Take transit losses as 20%

- c) Derive the relation between duty and delta and write the values of delta for any four crops.

Q.6) Attempt any TWO of the following.

12 Marks

- a) Find the diameter of an open well to give a safe yield of 4.8 lit/sec, assuming the working head as 3.5 m, sub soil consisting of fine sand for which C=0.50.
- d) Find the balancing depth for the canal having a bed width of 8m, full supply depth of 3m, top width of banks 6m and 3m, side slope 1:1.5(Cutting) 1:2(Banking) and freeboard 1m.
- e) Design a most economical canal section for the following data:-
 - 1) Discharge = 20m³/sec, 2) Manning's coefficient of rugosity = 0.01, 3) Canal is in full cutting with side slopes = 1.5:1, 4) Longitudinal bed slope is 1 in 2000.

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Scheme - I
Sample Test Paper -I

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Fifth
Course Title : Water Resources Engineering
Max. Marks : 20

22501

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.

Q.1 Attempt any FOUR of the following.

08 Marks

- a) State the four functions of galleries in a gravity dam and enlist their types.
- b) Write Inglis formula for run-off for Ghat area and Non- ghat area. Give the meaning of each term.
- c) Depth of water supplied to a paddy (rice) field for a period of 100 days is 120 cm. Calculate duty.
- d) Explain the terms- Dead storage, Live storage, FRL, Flood absorption capacity.
- e) Enlist four modes of failure of gravity dams.
- f) Describe the purpose of energy dissipators below spillways ?.

Q.2 Attempt any THREE of the following.

12 Marks

- a) Describe Thiessen polygon method of calculating average rainfall.
- b) Describe the two types of joints in gravity dams.
- c) Draw a neat labeled sketch of Simon's rain gauge station.
- d) Define the terms:- i) CCA ii) GCA iii) Average Bad year iv) Yield
- e) Calculate the safe yield from a CA 9362 Km² based on an average bad year rainfall and using Inglis formula, if average rainfall is 150 cm with 80% dependability.

Scheme - I
Sample Test Paper - II

Program Name : Civil Engineering Program Group
Program Code : CE/CR/CS
Semester : Fifth
Course Title : Water Resources Engineering
Max. Marks : 20

22501

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.

Q.1 Attempt any FOUR of the following.

08 Marks

- a) State any four advantages of percolation tanks
- b) Draw a sketch of a fish ladder and state its purpose.
- c) Describe any one method of computing yield of a well.
- d) State the purpose of marginal bunds and guide bunds.
- e) Under what site conditions is a super-passage advisable?.
- f) Enlist any four requirements of irrigation outlets.

Q.2 Attempt any THREE of the following.

12 Marks

- a) Prepare a checklist for of bandhara irrigation project.
- b) Design a canal section to carry $3.5\text{m}^3/\text{sec}$ discharge with bed slope of 1 in 1500 and side slopes 1:1. Concrete lining (ordinary) is provided. Take $N= 0.016$.
- c) Enlist advantages and disadvantages of canal lining.
- d) Identify the need for drip and sprinkler irrigation scheme.
- e) Describe construction procedure of K T weir.
