

B.E. Civil Engineering (Model Curriculum) Sem-VII
PCC-2 - CE-702 : Irrigation Engineering

P. Pages : 2

Time : Three Hours



GUG/W/22/14286

Max. Marks : 80

- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.

1. a) Determine the frequency of irrigation from the following data. 7
- i) Field capacity of soil = 35%
 - ii) Permanent wilting point = 18%
 - iii) Density of soil – 1.5 gm/cm^2
 - iv) Depth of root zone = 70 cm
 - v) Daily consumptive use of water = 17 mm
- b) Define duty, delta and base period. Derive a relation between them. 6
- c) Write a short note on lift irrigation. 3

OR

2. a) A field channel has a culturable commanded area of 2000 Ha. The intensity of irrigation for gram is 30% and for wheat is 50%. Gram has crop period of 18 days and kor depth of 12cm. While wheat has a kor period of 15 days & kor depth of 15 cm. Calculate the discharge of field channel. 8
- b) Write short note on: 8
- i) Surface irrigation
 - ii) Mixed cropping & crop rotation
3. a) What is mass curve? How will you determine storage capacity for the reservoir from the mass curve. 8
- b) What is water logging? Write causes, effects and remedial measure of waterlogging. 8

OR

4. Write short note on: 16
- i) Reservoir losses.
 - ii) Reservoir sedimentation and its control.
 - iii) Different pool level in reservoir.
 - iv) Water logging.
5. a) What are the various modes of failure of a gravity dam? Describe briefly. 6
- b) What is earthen dam and under what circumstances are they preferred? 6
- c) Distinguish between Gravity dam & earthen dam. 4

OR

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| 6. | a) | A gravity dam is 10m high. It has a top width of 1m and base width 9m the upstream face is vertical. The water is stored upto the top of dam. The specific weight of concrete is 24kN/m^3 . Test the stability of dam against overturning. | 8 |
| | b) | What are the cause of failure of earthen dam. | 4 |
| | c) | What are the different types of earthen dam? | 4 |
| 7. | a) | What is meant by canal lining and what are the its advantages? | 4 |
| | b) | Using Kennedy's theory, design a channel section for the following data:
Discharge $Q = 14$ cumec, Kutter's $N = 0.0225$
Critical velocity ratio = 1, Side slope 0.5:1
Bed slope = 1/5000 | 8 |
| | c) | What are the main types of canal lining. | 4 |

OR

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| 8. | a) | Design a regime channel for a discharge of 50 cumec and silt factor using Lacey's theory. | 8 |
| | b) | Distinguish between initial & final regime. | 4 |
| | c) | Write a short note on balancing depth. | 4 |
| 9. | a) | State the functions of the following in a head works with illustrative sketches. | 8 |
| | i) | Fish Ladder | |
| | ii) | Divide wall | |
| | iii) | Under sluice | |
| | iv) | Weir | |
| | b) | Explain Khosla's theory for the design of weir on permeable foundation. | 8 |

OR

- 10.** Write a short note on **any four**. **16**
- i) Canal Modules.
 - ii) Canal falls.
 - iii) Canal Regulators.
 - iv) Silt ejector.
 - v) Sluiceway.
