

- (b) Discuss the procedure for designing a straight glacis type of fall. **10**
7. (a) Discuss with neat sketch modular or rigid outlet. **10**
- (b) What are the different types of canal outlets ? Discuss in brief. **10**
8. (a) How aqueducts (or siphon aqueduct) are classified ? Indicate the circumstances under which each one is used. **10**
- (b) Explain method of determining uplift pressure on the roof of a siphon aqueduct. **10**

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B. Tech. EXAMINATION, Dec. 2017

(Sixth Semester)

(Weekend) (Re-appear Only)

CE-W-306

IRRIGATION ENGINEERING

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks. Assume suitable data if not provided.

1. (a) Discuss various sub-surface irrigation methods. Indicate limitation and advantages. **10**

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- (b) Determine the area which can be irrigated using surface method of irrigation with a source of water having a discharge of 10000 liters per minutes. The available moisture holding capacity of soil is 180 mm per metre and depth of root zone is 1.1 metre. Irrigation is done when 40% of available moisture is used. The total losses during irrigation is 35% and peak daily moisture use is 4.5 mm. **10**
2. (a) Design an irrigation canal to carry a discharge of 7 cumec. Assume $N = 0.0225$, $m = 1$ and $(B/D) = 3.24$. **10**
- (b) What is water logging ? Explain various effects or water logging. **10**
3. (a) Discuss briefly the design consideration of a weir on a permeable foundation. **10**
- (b) Discuss brief the bligh's creep theory and also discuss the limitation of these throies. **10**

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4. (a) A 20 metres high gravity dam having trapezoidal section has a top width 3 metres and bottom width 18 metres. The face of dam is exposed to water has a batter of 1:12. On the reservoir side water stands up to top. Assume coefficient of friction = 0.75 and allowable shear stress is 490 kN/m^2 . Calculate the factor of safety against overturning, uplift pressure and sliding. Neglect seismic weight. **15**
- (b) What are the various modes of failure of a gravity dam ? Discuss each briefly. **5**
5. (a) Sketch the layout of the a typical diversion head works and describe briefly the functions of various components of a diversion headwork. **15**
- (b) Describe briefly with neat sketch the various types of weir. **5**
6. (a) How Fall is classified ? Describe briefly with neat sketch the different types of fall. **10**

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