

**Unit IV**

7. Enumerate various methods for drilling tube wells. Describe percussion method in detail. Also explain well shrouding and well development. **15**
8. What is Darcey's law ? Under which condition(s) this law is valid ? Using Darcy's law develop the equation for the steady flow in a confined aquifer. **15**

No. of Printed Pages : 04

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**G-143**

**B. Tech. EXAMINATION, Dec. 2018**

(Seventh Semester)

(B. Scheme) (Main & Re-appear)

(CE)

CE405B

IRRIGATION ENGINEERING-I

*Time : 4 Hours*]

*[Maximum Marks : 75*

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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.

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**Note :** This paper contains eight questions in four Units. Each Unit contains two questions. Attempt *Five* questions in all, selecting at least *one* question from each Unit. Assume any missing data suitably.

M-G-143

4

640

(2-15/13) M-G-143

P.T.O.

### Unit I

1. (a) Why is it necessary to do irrigation ?  
Discuss also ill effects of it. **8**  
(b) What are the favorable conditions for  
sub-surface irrigation ? **7**
2. An irrigation canal has gross commanded area  
of 50,000 hectares out of which 75% is  
culturable irrigation. In a year there are two  
seasons of crop. The intensity of irrigation for  
the first season is 25% and for the second  
season is 65%. Find the discharge required at  
the head of the canal if the duty at its head is  
500 hectares/cumecs for the first season and  
1500 hectares/cumecs for the second season.  
**15**

### Unit II

3. What do you understand by rigid module ?  
List out common types of rigid module.  
Describe Gibb's module with help of sketch(s).  
**15**

M-G-143

2

4. (a) Describe balancing depth. **5**  
(b) The slope of a trapezoidal channel in  
alluvium is  $S = 1/4500$ ; Lacey's silt factor,  
 $f = 0.9$ ; Side slopes = 0.6H : 1V. Find  
the maximum discharge capacity and  
channel section which can be allowed to  
flow in it. **10**

### Unit III

5. What do you understand by guide bank in the  
context of a river ? Draw a neat sketch of a  
guide bank system and discuss various design  
considerations. **15**
6. The average annual rainfall of an area is 900  
mm. Find the spacing of the drains located at  
2.0 m below ground surface if 2.5% of average  
annual rainfall is to be drained in 24 hours.  
The water table is 1.5 m below ground level.  
It is given that depth of impervious stratum  
from ground surface is 8.0 m. The average  
permeability of stratum from ground surface  
to impervious stratum is  $1.0 \times 10^{-4}$  m/s. **15**

(2-15/14) M-G-143

3

P.T.O.