

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Irrigation Engineering

Subject Code : 4TE05IRE1 **Branch :** B.Tech(Civil)

Semester : 5 **Date :** 02/05/2016 **Time :** 02:30 To 05:30 **Marks :** 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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| Q-1 | Attempt the following questions: | (14) |
| | a) Define Permanent wilting point. | 01 |
| | b) What is soil moisture tension? | 01 |
| | c) Define kor period. | 01 |
| | d) What is Intensity of irrigation? | 01 |
| | e) What do you mean by lining a canal? | 01 |
| | f) What do you understand by water logging? | 01 |
| | g) Define rabi crops. | 01 |
| | h) Define Paleo. | 01 |
| | i) What is field capacity? | 01 |
| | j) What is land reclamation? | 01 |
| | k) Define transmissibility. | 01 |
| | l) What is aquifer? | 01 |
| | m) What is pitched island? | 01 |
| | n) Define specific retention. | 01 |

Attempt any four questions from Q-2 to Q-8

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| Q-2 | Attempt all questions | (14) |
| | (a) What are various types of water losses in an irrigation canal? | 05 |
| | (b) The culturable commanded area for a canal is 9000 hectare. The intensity of irrigation for kharif, Rabi and 8 monthly (kharif and rabi) crops are 40%, 60% and 10% respectively. Duty for kharif, Rabi and 8 monthly crops are 700, 1200 and 600 hectare/cumec. Peak demand is 1.30 times the average demand. Determine design discharge of the canal. | 05 |
| | (c) Differentiate between Sprinkler irrigation and Drip irrigation. | 04 |
| Q-3 | Attempt all questions | (14) |
| | (a) What are the advantages and disadvantages of lining a canal? | 05 |
| | (b) Explain various types of strainers used in tube well. | 05 |
| | (c) Differentiate between the Kennedy's silt theory and Lacey's silt theory. | 04 |



- Q-4** **Attempt all questions** **(14)**
- (a) What are the main causes of water logging? 05
- (b) What are the main objectives of river training works? Give classification of river training works. 05
- (c) Explain financing of irrigation works. 04
- Q-5** **Attempt all questions** **(14)**
- (a) Define irrigation. What are benefits and ill effects of irrigation? 07
- (b) The field capacity of a certain soils is 18.0% and its specific gravity is 1.60. A wet sample of soil taken before irrigation weight 152 gm and its weight after oven drying is 140 gm. What depth of water must be applied to irrigate the soil to a depth of 1.2 m? 07
- Q-6** **Attempt all questions** **(14)**
- (a) Define duty and delta. Derive a relationship between duty and delta for a given base period. 07
- (b) The root zone of a crop in a certain soil has field capacity 40% and a permanent wilting point of 12% determine : 07
- (1) The depth of moisture in the root zone per meter at the field capacity and at the permanent wilting point.
- (2) The available depth of water if the root zone depth is 1.2 m. Take dry unit weight of soil as 16 kN/m^3 .
- Q-7** **Attempt all questions** **(14)**
- (a) Explain the procedure for the design of a non-alluvial channel. 07
- (b) Design a channel by Lacey's theory for 40 cumec capacity. The side slope may be 1:1 the average size of the bed material may be taken as 0.8 mm. 07
- Q-8** **Attempt all questions** **(14)**
- (a) What are the factors to be considered for canal alignment? 07
- (b) Explain with neat sketch the most effective and economical methods for providing drainage behind lining. 07

