

GANPAT UNIVERSITY
B. Tech. Semester: VII (CIVIL)
Regular Examination - December 2013
2CI 704 IRRIGATION ENGINEERING

Time: 3 Hours

Total Marks: 70

- Instruction:**
- 1 Answer to the two sections must be written in separate answer books.
 - 2 Assume suitable data if required.
 - 3 Figures to the right indicate full marks

Section-I

- | | | |
|--------|---|----|
| Q-1(a) | Define the term 'Irrigation'. State the objectives of irrigation | 6 |
| Q-1(b) | State how over-irrigation may turn disastrous? | 6 |
| OR | | |
| Q-1(a) | Why and how the 'Lift Irrigation' is advantageous? | 6 |
| Q-1(b) | What are the different measures of curbing the ill-effects of Irrigation | 6 |
| Q-2(a) | Define the term 'Duty' and describe the measures for improving it. | 6 |
| Q-2(b) | Determine the FC of a soil. Data given:- | 5 |
| | (i) Depth of Root zone -- 1.40 m | |
| | (ii) Existing Water Content-- 8% | |
| | (iii) Dry Unit Wt of Soil-- 16 kN/ m ³ | |
| | (iv) Area of land to be irrigated-- 880 m ² | |
| | (v) Volume of Water applied-- 50 m ³ | |
| | (vi) Water lost --12% | |
| OR | | |
| Q-2(a) | Explain the terms 'Perennial and non-perennial irrigation' | 6 |
| Q-2(b) | A Minor is designed to irrigate 1260 ha of Wheat.
Base period = 105 Days
And during this period, total depth of water is required = 60 cm | 5 |
| | [1] Find the duty of irrigation water on the field if there is an effective rainfall of 15 cm | |
| | [2] Find the duty and discharge at the head of the minor assuming losses of 20% in the minor | |
| Q-3 | Answer the followings: | 12 |
| | (1) State disadvantages of lift irrigation. | |
| | (2) Compare surface and sub-surface irrigation | |
| | (3) Why drip system of irrigation is preferable? | |

[PTO]

Section-II

- Q-4(a) State 'Structural failures' of Earth Dam 6
- Q-4(b) State the circumstances which lead to construct diaphragm earth dam. 6
Draw a sketch showing details of a diaphragm Earth Dam
- OR
- Q-4(a) Define 'Phreatic line' and its importance 6
- Q-4(b) State computation of uplift pressure acting on a Earth-Dam(reservoir full condition), given that a gallery is provided and also there exists a tail water level (Draw a sketch) 6
- Q-5(a) State the importance of temperature control in a concrete gravity dam and state the methods for the same 6
- Q-5(b) Describe the sliding failure of a Gravity Dam with sketch 5
- OR
- Q-5(a) What are the functions of an Escape structure in a canal system? State the points to be attended for its site selection 6
- Q-5(b) Which points are considered while selecting cross drainage works across a canal alignment 5
- Q-6 Answer the following:- 12
- (1) State the limitations of Kennedy's theory
 - (2) Describe seepage control measures through the foundation of an Earth Dam with sketch
 - (3) What is flownet? State its importance

END OF PAPER