

EVminj.
Date: 28/11/2015.

Student Exam No. _____

GANPAT UNIVERSITY

B. Tech. Semester: VII (CIVIL ENGINEERING)

Regular Examination – Nov/December 2015

2CI 704 IRRIGATION ENGINEERING

Total Marks: 70

Time: 3 Hours

- 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 Gravity Dam [GD]. State the advantages of a Gravity Dam. Why the concrete Gravity Dams are preferred for construction? 6
- Q-1(b) State the different classifications of E-Dams. State the limitations of Homogeneous type of E-Dam. In which condition, the construction of 'Diaphragm' type of E-Dam is preferred? 6
- OR**
- Q-1(a) Briefly state the seepage control measures thro' the Foundation of the E-Dam Draw the sketches] 6
- Q-1(b) State the assumptions made in the analysis and design of a Gravity dam. Discuss the 'Failure due to Tension' in case of a Gravity dam. 6
- Q-2(a) Define the terms 'Weir' and 'Barrage'. Differentiate: weirs and barrages. State why barrage is a preferred option? 6
- Q-2(b) Define the term 'Phreatic Line'. State its importance in the stability analysis of an Earth Dam? 5
- OR**
- Q-2(a) Draw typical layout of a diversion headwork and show the details. 6
- Q-2(b) State and briefly describe the methods of temperature control in the Concrete Gravity Dam. 5
- Q-3 Answer any **three** of the following:- 12
- (1) 'Curtain Grouting' in the Gravity dam.
 - (2) Discuss possible causes of seepage failures and the measures thereof for an Earth dam.
 - (3) Write a note on: Drainage Gallery.
 - (4) Write a note on 'Under Sluice' portion of a Diversion Headwork.
 - (5) State the Bligh's theory and its limitations.

[PTO]

Section-II

- Q-4(a) Define the term 'Irrigation'. What is the importance of water application for the plant growth? Briefly state the scope of 'Irrigation'. 6
- Q-4(b) Enlist methods of irrigation. Why the drip system is considered as the superior method of irrigation? 6

OR

- Q-4(a) Define the terms 'Water-logging' and 'Soil salinity'. Briefly state the preventive measures to avoid the ill-effects of irrigation. 6
- Q-4(b) Define the term 'Duty' and 'Delta'. State the factors affecting the Duty. State the measures to improve the duty. 6

- Q-5(a) Explain advantages and disadvantage of well [lift] irrigation over canal [surface] irrigation. 6
- Q-5(b) What is contour canal? Explain factors affecting the canal alignment. 5

OR

- Q-5(a) Define Head Regulator & Cross Regulator. Enlist functions of [i] Head Regulator and [ii] Cross Regulator. 6
- Q-5(b) An earthen canal has to irrigate 36,000 ha of Rabi (wheat). If duty at head is 600 ha/cumec. Determine the dimensions and the bed slope of the canal by Manning's formula. Assume (B/D) ratio as 6, $N = 0.025$, side slope = 1.5: 1 and permissible velocity of 0.80 m/s. 5

- Q-6 Answer any **three** of the followings: 12
- (1) Briefly discuss the adverse effects water-logging
 - (2) Losses in canal
 - (3) Canal Escape structure
 - (4) Write short note on Sprinkler Irrigation
 - (5) Necessity of 'Fall Structures' in canal system

END OF PAPER