Student Exam No._____

GANPAT UNIVERSITY

B. Tech. Semester: VII (CIVIL ENGINEERING))

Regular Examination - November 2014

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

Question No	Question	Marks
Q-1		
Q-1(a)	Define the term 'Irrigation'. How irrigation has been proved to be a boon to the Indian economy?	6
Q-1(b)	Enlist methods of irrigation. Explain 'Sprinkler Irrigation Method'	6
	OR	
Q-1(b)	Compare the 'Flood Irrigation' and the 'Micro Irrigation'. Why it is imperative to go for micro irrigation systems even at high capital outlay?	6
Q-2		
Q-2(a)	Define the term 'Duty'. State the factors affecting the Duty and the measures to improve the duty	6
Q-2(b)	A Left branch canal carrying a discharge of 20 cumecs has culturable command area of 20000 ha. The intensity of Rabi crop is 80% and the base period is 120 days. The Right branch canal carrying discharge of 8 cumecs has culturable command area of 12000 ha, intensity of irrigation of Rabi crop is 50% and the base period is 120 days. Compare the efficiencies of the two canal systems.	5
	OR	
Q-2(b)	An earthen canal has to irrigate 24,000 ha of Rabi (wheat). If duty at head is 400 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-3	Answer any **three** of the followings:	12
	(1) Briefly discuss the adverse effects waterlogging	
	(2) Points to be attended while fixing the canal alignment	
	(3) Scope of irrigation	
	(4) Write short note on Bandhara Irrigation	
	(5) Necessity of 'Fall Structures' in canal system	

[PTO]

Section-II

Question No	Question	Marks
Q-4		
4(a)	State the design criteria for the Earth Dam. Draw a neat sketch of a section of the Earthen Dam showing the details.	6
4(b)	State the different forces acting on the Gravity Dam. Draw the uplift pressure diagram considering the dam is having a drainage gallery [at 0.2B from the u/s face, where B = width of the dam at the foundation] but no tail water, showing all the relevant details.	6
	OR	
4(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-5		
5(a)	Define the term 'Barrage'. State how the barrage is a preferable to the solid weir.	6
5(b)	Define the term 'Phreatic Line'. State its importance in the stability analysis of an Earth Dam?	5
	OR	
5(b)	State the main functions of the following canal structures:- [i] Head Regulator [ii] Cross Regulator [iii] Canal Escapes [iv] Canal Siphon and [v] Super Passage	5
Q-6	Answer any **three** of the following:-	12

(1) Consolidation grouting in the gravity dam.
(2) Discuss possible causes of hydraulic failures and the measures thereof for an Earth dam.
(3) Write a note on 'Escape Structures on the canals'.
(4) Describe with a sketch the 'Electrical Analogy' method for flownet Construction.
(5) Methods of Temperature control in the Concrete Gravity Dam.

END OF PAPER