

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, May 2022
B. Tech. (CE), Semester VI, 2021-22

Roll No.....

CE1203: IRRIGATION ENGINEERING

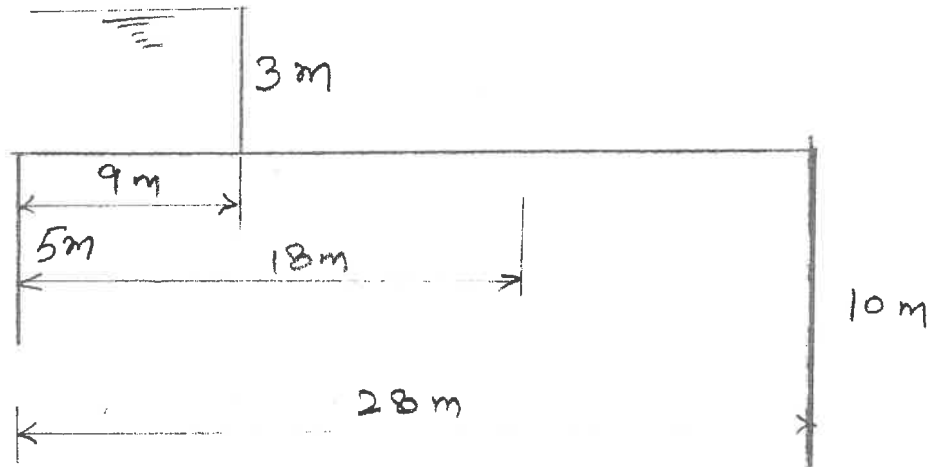
Time: 2 hours

Max. Marks: 35

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.

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- Q. 1.1 Farmers of Bundi district cultivate wheat crop during Rabi season. Soil in the fields having following properties. i. field capacity of soil = 25 % ii. Permanent wilting point = 12% iii. Dry density of soil = 1.7 gms/cc iv. Effective depth of root zone = 80 cm and daily consumptive use of water is 18 mm per day. After how many days it is required to apply water again to grow the crop? 5.0
(LO1, 2)
- Q. 1.2 What may be the total requirement of water for 10 Hectare of field if the base period is 120 days and irrigation efficiency is 80% in the field. 2.0
(LO1, 2)
- Q. 2.1 For the fields of Kanpur District, an alluvial canal is required to design. Kennedy's theory of canal design is used for the same. In this canal Full supply discharge = 18 cumec; Bed slope 1 in 6000; $N = 0.0225$, Critical velocity ratio, $m = 1$, side slope 0.5 H : 1 vertical. Take 2 iteration for the design. 7.0
(LO3)
- Q. 2.2 For same discharge canal is designed in Jaipur district (i.e. rigid bed channel). The bed slope is 1 in 6000 and Manning's roughness coefficient is 0.016. Side slope is 1 H : 1 V. What may be the percentage change in the cross-sectional area of the canal for both the cases? 7.0
(LO3)
- Q. 3 Suggest the suitable type of Cross drainage works for the following cases 3.0
(LO4)
- i. Canal crosses a large river and bed level of canal is above river bed level
 - ii. Large canal crosses small river and river bed is above canal bed level
 - iii. Small river and canal meet at same level
 - iv. Small canal crosses medium size river with small differences in bed level
- Q. 4 Section of a Hydraulic structure founded on Yamuna River near Agra is given in Fig. given below. Calculate the average hydraulic gradient. Also, find the uplift pressures at points 9, 18 and 28 m from the u/s end of the floor and find the thickness of the floor at these points taking $\rho = 2.28$. 5.0
(LO5)



- Q. 5 What is the major purpose of providing spillways in the dam? Draw a neat sketch of ogee shaped spillway. 3.0 (LO6)
- Q. 6 Write short note on the drip and sprinkler irrigation with special emphasis to irrigation requirement and water shortage in Rajasthan. How these two methods are useful for sustainability? 3.0 (LO7)

all the best!