53 (CE 716) IREN

2019

IRRIGATION ENGINEERING

Paper : CE 716

Full Marks : 100

Time : Three hours

***The figures in the margin indicate
full marks for the questions.***

*Answer **any five** questions.*

1. (a) What is waterlogging, how does it influence soil salinity and how water logging can be prevented ?   8

    (b) Distinguish between a weir and barrage.   6

    (c) A channel section has to be designed for the following data :   6

      Discharge $\theta = 45$ *cumecs*, Silt factor $f = 1 \cdot 00$, Slide slope = 16 : 1 also find the slope.

2. (a) Draw cross section of canal in fully cutting and canal in full embankment. 7

(b) Enumerate various types of lining used for canal and benefits of lining of canal. 7

(c) Discuss the salient features of Kennedy's theory for the design of earth canal based on the critical velocity concept and mention its limitations. 7

3. (a) What are the types of weirs in diversion headwork ? 4

(b) Describe the functions of (i) Under Sluices (ii) Divide wall (iii) Silt Excluder (iv) Fish ladder. 12

(c) 120 litres per second available at the head of field for 5 hours continuously. After irrigation over 0·2 hectares area of crop field, depth stored in root zone was 0·8m. Calculate water application efficiency. 4

4. (a) Write a note on selection of suitable type of cross drainage work. 4

(b) Describe briefly Aqueduct and Siphon aqueduct with a neat sketch. 10

(c) Explain the difference between Kennedy's and Lacey's theory. 6

5. (a) Why canal fall is necessary ? Write a short note on various types of canal fall. 10

(b) Explain Bligh's theory for design of weir. 6

(c) What are the functions of a canal head regulator ? 4

6. (a) What do you understand by level crossing ? 6

(b) Explain sarda type of fall. 6

(c) What is meant by land drainage ? 4

(d) Explain balance depth of canal. 4

7. (a) Explain the procedure of designing a channel with Kennedy's theory. 6

(b) Design an irrigation channel to carry a discharge of 50 cumecs. Assume $m = 1$, $N = 0.0225$. The channel has a bed slope of 0.18 meter per kilometer. 4

(c) With a neat sketch, explain in brief the various component of diversion headwork. 10

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