Total number of printed pages–4

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) Explain the various considerations taken into account in the selection of an Irrigation system. Enumerate the advantages and disadvantages of Irrigation. 10

   (b) What are the various methods of application of water to field ? Discuss the methods of application you will adopt for hilly terrain. 10

Contd.

2. (a) Find the delta for sugarcane when the duty is 1700 hectares/cumec on the field and the base period of crop being 360 days. 6

(b) Distinguish between Siphon aqueduct and Canal siphon with neat sketch. 14

3. Define the following terms : 2×10=20

(a) Consumptive use of surface water

(b) Gross command area

(c) Delta, Duty and Base period

(d) Kor watering

(e) Water application efficiency

(f) Canal Regulator

(g) Vertical fall

(h) Guide bank

(i) Basin flooding

(j) Canal lining.

4. (a) An agricultural land of 437 hectares is to be irrigated for a particular crop, the base period of line crop is 90 days and the total depth of water required by the crop is 105cm. If a rainfall of 15cm occur during th base period, what will be the duty of irrigation water ? 4

(b) Explain how Lacey's theory is an improvement over Kennedy's theory. 6

(c) Using Lacey's theory, design irrigation channel for follow data : 6

Discharge = 500 cumecs

Silt factor $f = 1$

Side slope = ½ : 1

(d) With the help of sketch, describe a Trapezoidal Notch. 4

5. (a) In Khosla's theory, how is the exit gradient of a weir in permeable foundation estimated ? Using the theory, how can the factor of safety of a weir against piping to be estimated ? 10

(b) Explain the functions of Upstream and Downstream piles of a barrage. How are their depth decided ?   5

(c) The culturable command area for a distributary is $3 \times 10^8 m^2$, if the kor depth and kor period are $14 cm$ and 4 weeks respectively. Determine the peak demand discharge. The intensity of irrigation for the crop is 40%.

     5

6.   *(a)* Explain the various methods of Reclamation of Akaline and Saline land.   8

    (b) Explain in brief, the various methods of Irrigation.   12