Registration No. :

Total number of printed pages – 2

Sixth Semester (Back) Examination – 2013

IRRIGATION ENGINEERING

BRANCH : CIVIL

QUESTION CODE : B 278

Full Marks – 70

Time : 3 Hours

*Answer Question No. 1 which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions :   2×10

   (a) In which situation inundation irrigation is adopted ?

   (b) What is the difference between contour canal and contour farming ?

   (c) Write two limitations of sprinkler irrigation.

   (d) Explain field capacity.

   (e) What is culturable uncultivated area ?

   (f) What is regime condition of canal ?

   (g) What is type-III aqueduct ?

   (h) What are the equations used for calculation of wave pressure on concrete dam ?

   (i) How does the u/s slope of earthen dam fail during sudden drawdown ?

   (j) Why it is advisable to limit the hydraulic gradient within exit gradient ?

2. The gross area of an irrigation project is 50,000 hectares. Out of this, about 5000 hectares have been utilized for construction of dwelling roads, bridges etc. The area to be cultivated during Kharif (i.e summer season) is 24,000 hectares and

P.T.O.

during Rabi (i.e winter season) 25,000 hectares. The duty of canal water for Rabi crop is 5000 hectares per cumecs and for kharif crops is 3000 hectares per cumecs. Find the design discharge for the canal after giving a 10% allowance for peak discharge and loss of water in transit. 10

3. Describe various systems of irrigation. 10

4. Discuss the design consideration of C.D work from the point of view of 5+5

   (a) fixing the waterway requirement

   (b) Pucca canal trough

5. From the following data design the practical profile of a gravity dam : 10

   Ground level R.L = 1130.5 m

   R.L of HFL   = 1155.5 m

   Wave height.   = 1.0 m

   Specific gravity of dam material = 2.5

   Permissible compressible stress = 125 t/m²

6. (a) Discuss the defects in kennedy's approach for designing a canal section. 5

   (b) Design a regime channel for a discharge of 30 cumecs with a silt factor = 1.0, by using Lacey's theory. 5

7. Discuss the safety factor against piping and uplift of concrete floor on pervious foundation by Bligh's creep theory. 10

8. Write short notes on : 5×2

   (a) Typical sketch of canal head regulator

   (b) Sub-surface drainage for water logged area.