Total number of printed pages – 2

B. Tech

PCCl 4305

Sixth Semester Back Examination – 2015
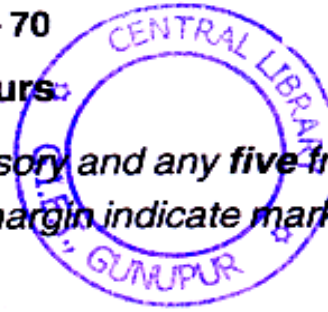
IRRIGATION ENGINEERING

BRANCH : CIVIL

QUESTION CODE : M 174

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) How water is applied by contour lateral method ?

    (b) What is the difference between GCA and CCA ?

    (c) How frequency of irrigation is decided ?

    (d) Explain regime theory of Lacey.

    (e) Why pH value of soil increases in waterlogged area ?

    (f) In which situation canal syphon is adopted ?

    (g) Mention different types of layout of tile drain system.

    (h) What is limiting height of high and low dam ?

    (i) What is the maximum allowable value of eccentricity of forces in gravity
         dam ?

    (j) How the earth dam fails by spreading ?

2. Explain the effect of horizontal and vertical acceleration of earthquake on the
    concrete dam.   10

P.T.O.

3. What causes water logging ? How this effect can be reduced ?   10

4. (a) Water is released at the rate of 5 cumecs at the head sluice. If the duty at the field is 100 hectares/cumec and the loss of water in transit is 30%, find the area of the land that can be irrigated.   5

   (b) A reservoir with a live storage capacity of 300 million cubic metres is able to irrigate an ayacut of 40,000 Hectares with 2 fillings each year. The crop season is 120 days. What is the duty ?   5

5. (a) Write the various factors affecting the duty of a canal system.   5

   (b) Why parallel canal will improve the duty ? Write two disadvantages of parallel canal.   5

6. (a) Explain the failure of earth dam by piping.   5

   (b) Explain the failure of earth dam by erosion of d/s face. How this can be avoided ?   5

7. (a) What is meant by "Cross-drainage work" ? Explain as to why such works are not met within a ridge canal system.   5

   (b) How the fluming of canal is made in cross-drainage work ? Explain by a neat sketch.   5

8. Write short notes any **two** of the following :   5×2

   (a) Super passage

   (b) Critical Velocity Ratio

   (c) Spoil bank and borrow pit

   (d) Critical Exit Gradient.