GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022
B. Tech Degree Examinations, December – 2020
(Seventh Semester)
BCEPC7020- WATER RESOURCE ENGINEERING
(Civil Engineering)

Time: 2 hrs   Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions)   **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions

a. Unit Hydrograph theory was enunciated by
   (i) Merril Bernard   (ii) W.W. Horner

   (iii) Le-Roy K. Shermen   (iv) Robert E. Horten

b. River training for depth is achieved by
   (i) Groynes   (ii) Construction of dykes or leaves
   (iii)Both A and B   (iv) Groynes and bandalling

c. The surface Run-off is the quantity of water
   (i) absorbed by soil   (ii) intercepted by buildings and vegetative cover
   (iii) required to fill surface depressions   (iv) that reaches the stream channels

d. Pick up the correct equation from the following :
   (i) Run off = Surface run off + Ground water flow   (ii) Run off = Surface run off - Ground water flow
   (iii) Run off = Surface run off / Ground water flow   (iv) Run off = Surface run off *Ground water flow

e. The main factor which affects the infiltration capacity, is
   (i) thickness of saturated layer   (ii) depth of surface detention
   (iii) soil moisture   (iv) all the above.

f. Absolute humidity in air
   (i)decreases at higher altitudes   (ii) increases at higher altitudes
   (iii) remains constant at all altitudes   (iv) none of these.

g. The deficiency in rain catch due to vertical acceleration of air forced upward over the gauge, is
   (i) greater for heavy rain   (ii) greater for lighter rain
   (iii) greater for larger drops   (iv) lesser for smaller rain drops

h. A hydraulic jump in a control meter will be formed above the control, if its original
   (i)depth is more than critical depth   (ii) depth is lesser than the critical depth
   (iii) depth is equal to critical depth   (iv) none of these.

i. The runoff is affected by
   (i) type of precipitation   (ii) rain intensity and duration of rainfall
   (iii) rain distribution and soil moisture deficiency   (iv) All of the above

j. For the estimate of high floods in fan-shaped catchment, the formula used is
   (i) Dicken's formula   (ii) Ryve's formula
   (iii) Inglis formula   (iv) None of these

PART – B: (Short Answer Questions)   **(2 x 5 = 10 Marks)**

Q.2. Answer *ALL* questions

    a.   Examine Hydrologic cycle?

    b.   What is W-index?

    c.   Determine the meaning of hydrograph?

    d.   Describe S hydrograph?

    e.   Highlight the importance of Reynold's number?

PART – C: (Long Answer Questions)   **(6 x 5 = 30 Marks)**

Answer *ANY FIVE* questions   Marks

3.   Explain about the various types of precipitation?   (6)

4.   A 12-hour storm rainfall with the following depths in cm occurred over a basin: 2.0, 2.5, 7.6, 3.8, 10.6, 5.0, 7.0, 10.0, 6.4, 3.8, 1.4 and 1.4. The surface runoff resulting from the above storm is equivalent to 25.5 cm of depth over the basin. Determine the average infiltration index (Φ-index) for the basin.   (6)

5.   Describe various stream discharge measurement methods?   (6)

6.   How do you ascertain regulation of canal system?   (6)

7.   What are the assumptions and limitations of unit hydrograph theory?   (6)

8.   Narrate various types of river training works?   (6)

9.   The rate of flow of water through a circular channel of diameter 0.6m is 150liters/s. Find the slope of the bed of the channel for maximum velocity. Take C = 60.   (6)

10.   Prove that for the trapezoidal channel of most economical section: half of top width = length of one of the slopping sides.   (6)

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