PAPER ID-410478

Subject Code: KCE055

Roll No: | | | | | | | | | | | | | |

B.TECH.
(SEM-V) THEORY EXAMINATION 2021-22
ENGINEERING HYDROLOGY

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. Write expression for normal ratio method to calculate missing rainfall at a station.
b. Write various applications of hydrology.
c. List the factors affecting flood hydrograph
d. What is unit hydrograph? Write the assumption involved.
e. What is risk and reliability?
f. Define attenuation and lag?
g. What is the difference between specific yield and specific capacity?
h. What is well loss?
i. What is well development?
j. What is rainwater harvesting?

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. A river reach had a flood passing by. At a given instant the storage in the river was estimated as 16 ha.m. What would be the storage in the river after an interval of 3 hours if the average inflow and outflow are 15.2 m^3/sec and 10.2 m^3/sec respectively?
b. Explain the procedure of using a flood hydrograph occurred in a catchment to develop a unit hydrograph.
c. What do you mean by prism and wedge storage with reference to hydrologic routing? Also draw a labeled diagram.
d. Discuss the principle of recuperation test of an open well.
e. Write short notes on following:
(i) Return Period
(ii) Transmissibility

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain different types of precipitation with diagrams.
(b) Draw a diagram showing distribution of soil moisture in infiltration process. Also explain different zones.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Draw a neat sketch of flood hydrograph. Briefly explain its component parts.
(b) Explain the method of S-curve using appropriate example.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Flood frequency computation for the Tehri dam, by using Gumbel's method, yielded the following results:-

Return period T (years)	Peak Food (m^3/sec)
50	40,809
100	46,300

Estimate the flood at a return period of 250 years.

(b) A bridge has an expected life of 30 years and is designed for a flood magnitude of 120 years. Calculate risk involved. What return period have to be adopted if 15% risk is acceptable.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) What are the different forms of subsurface water? Explain with the help of diagram

(b) Derive an equation to calculate discharge from a well in case of unconfined aquifer.A tube well is 0.46 m in diameter. The unconfined aquifer is of 18 m depth. After drawdown depth of water is 12 m in the well. Permeability of soil is 24.50 m/day. Radius of circle of influence is 275 metres. Calculate the discharge of the tube well.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Write the difference between Open wells and tube wells. Provide its method of construction by analysing the soil and ground level characteristics.

(b) Write the well construction methods in detail. Also Describe the operation and maintenance of water wells.