**Code No.: PC307CE**

**METHODIST COLLEGE OF ENGINEERING & TECHNOLOGY**

**(An Autonomous Institutions)**

**B.E.(CIVIL) IV-Semester (Supplementary) Examination,FEB-2024**

**Subject: HYDROLOGY**

**Time: 3 hours Max.Marks:60**

**Note: Missing data, if any, maybe suitably assumed.**

**PART-A**

**Answer All the questions. (10X2M=20M)**

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| --- | --- | --- | --- | --- |
| **Q.No.** | **Questions** | **Marks** | **CO** | **BTL** |
| **1.a** | Define probable maximum precipitation. | 2 | 1 | 1 |
| **b** | Mention any two types of Evapopans. | 2 | 2 | 4 |
| **c** | What is concentration time, how is it estimated? | 2 | 3 | 1 |
| **d** | Discuss various factors affecting evapo transpiration | 2 | 2 | 6 |
| **e** | Write any one equation to estimate evaporation by empirical method. | 2 | 3 | 5 |
| **f** | List out various climate factors affecting runoff. | 2 | 3 | 1 |
| **g** | Distinguish between aquifer and aquifuge. | 2 | 4 | 4 |
| **h** | Write any two assumptions made in Darcy’s law. | 2 | 4 | 1 |
| **i** | What are the factors affecting infiltration? | 2 | 2 | 1 |
| **j** | Draw a neat sketch of tipping bucket type rain gauge. | 2 | 1 | 2 |

**PART-B**

**Answer Any Five questions**. **(5X8=40M)**

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| --- | --- | --- | --- | --- | --- |
| **Q.No.** |  | **Questions** | **Marks** | **CO** | **BL** |
| **2** | a | Draw a neat sketch of Hydrologic cycle. | 4 | 1 | 2 |
| b | Explain various types of precipitations. | 4 | 1 | 2 |
| **3** | a | Discuss various factors affecting evapo-transpiration. | 4 | 2 | 2 |
| b | Explain how evapo transpiration can be estimated using Blaney-Criddle equation and Throuthwaite equation. | 4 | 2 | 2 |
| **4** | a | What are the affecting runoff? | 4 | 3 | 1 |
| b | Determine the runoff by SCS-CN Method | 4 | 3 | 5 |
| **5** | a | Derive an expression for the steady stage discharge of a well fully penetrated into a confined aquifer. | 4 | 4 | 3 |
| b | A well of 0.5m diameter penetrates fully into confined aquifer of thickness 20m and hydraulic conductivity 8.2x10-4 m/s. What is the maximum yield expected from the well if the draw down is not to exceed 3m and radius of influence is 260m. | 4 | 4 | 4 |
| **6** | a | Describe the method of estimating Tr-year flood using Gumbel’s distribution. | 4 | 5 | 5 |
| b | The analysis of 30 years flood data at a point on a river yielded X/ =1200m3/s and S(x)=650m3/s. For what discharge would you design the structure to provide 95% assurance that structure would not fail in the next 50 years. Use Gumbel’s method. | 4 | 5 | 4 |
| **7** | a | Describe the principal of working of a float type recording rain gauge with a neat sketch. | 4 | 1 | 4 |
| b | A rain gauge station X is not functioned for a part of a month during which a storm occurred. The storm produced rainfalls of 84,70,96mm at three surrounding stations A,B and C. The normal annual rainfalls at stations X,A,B and C are 770,882,736,944mm. Estimate the missing storm rainfall at station X. | 4 | 1 | 4 |
| **8** | *a* | Explain different component of hydrograph along with sketch | 4 | 3 | 1 |
| b | Explain the derivation of Unit hydrograph ? | 4 | 3 | 4 |
| **9** | a | List out various factors affecting infiltration. | 4 | 2 | 4 |
| b | Write the assumptions made for unit hydrograph. | 4 | 3 | 1 |

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