

Total No. of Questions : 8]

SEAT No. :

P-250

[Total No. of Pages : 2

[6003]-327

T.E. (Civil) (Semester - I)

Hydrology & Water Resources Engineering

(2019 Pattern) (301001)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Q. No 1 or Q. No 2, Q. No 3 or Q. No 4, Q. No 5 or Q. No 6, Q. No 7 or Q. No 8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.

Q1) a) Explain hydrological design of culverts and bridges. [10]

- b) An urban catchment has area of 85 ha. The slope of catchment is 0.006 and the maximum length of water travel is 950 m. The maximum depth of rainfall with return period of is as below

| | | | | | | |
|------------------------|----|----|----|----|----|----|
| Duration (mm) | 5 | 10 | 20 | 30 | 40 | 60 |
| Depth of rainfall (mm) | 17 | 26 | 40 | 50 | 57 | 62 |

If a culvert for drainage at the outlet of this area is to be designed for a return period of 25 years estimate the required peak flow rate, by assuming runoff coefficient as 0.3 [8]

OR

Q2) a) State and explain step by step procedure to delineate watershed on a topo sheet with neat sketches. [10]

- b) Explain step by step software procedure to generate contour map of a catchment area where dam is to be constructed. [8]

Q3) a) State and explain importance of various investigations to be carried out before construction of multipurpose dam project. [10]

- b) What are reservoir losses and suggest method to control leakages from reservoir. [7]

OR

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- Q4)** a) Explain how you will fix the capacity of reservoir using elevation capacity curve and dependable yield. Explain neat sketch. [10]
b) State measures to control reservoir sedimentation. [7]

- Q5)** a) Derive the formula to calculate discharge of a well in a confined aquifer and unconfined aquifer. [10]
b) What is water logging? Explain tile drain method and also state formula for spacing of tile drains. [8]

OR

- Q6)** a) Explain participatory irrigation management and also explain water distribution societies in detail. [10]
b) State various types of tube wells and explain construction of any type. [8]

- Q7)** a) Explain Piped Distribution Network (PDN) and state its advantages. [10]
b) What is micro irrigation and what are its advantages compared to other methods of irrigation. [7]

OR

- Q8)** a) State various methods of canal revenue collection and explain any two in detail. [10]
b) Differentiate between surface irrigation and subsurface irrigation and explain drip irrigation in detail. [7]

