Total No. of Questions : 8]

SEAT No. :

PD4208

[Total No. of Pages : 2

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T.E. (Civil Engineering)
HYDROLOGY AND WATER RESOURCES ENGINEERING
(2019 Pattern) (Semester - V) (301001)

Time : 2½ Hours] *[Max. Marks : 70*

Instructions to the candidates:

1) ***Answers 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) State the various methods to estimate the magnitude of peak flood. Explain any two methods in detail. **[2+7]**

b) Estimate the maximum flood flow for the following catchments by using an appropriate empirical formula; **[9]**
Consider Dickens constant 6.0 and Ryves Coefficient 6.8.

i) $A_1 = 40.5\ km^2$, (for Western Ghat area, Maharashtra).
ii) $A_2 = 40.5\ km^2$, (in Gangetic plain).
iii) $A_3 = 40.5\ km^2$, (in the Cauvery delta, Tamil Nadu).

OR

Q2) a) State and explain Q-GIS software application in hydrology (watershed delineation). **[8]**

b) What is hydrologic flood routing? Explain Muskingum method in detail. **[3+7]**

Q3) a) Explain in brief various investigations required for reservoir planning. **[7]**

b) State the significance of mass curve. Explain the step by step procedure for fixation of reservoir capacity using annual inflow and outflow. **[2+8]**

OR

Q4) a) Explain with neat sketch the significance of reservoir sedimentation and trap efficiency. **[5+5]**

b) What are the different losses which take place from the reservoir. Explain the measures to control this losses. **[3+4]**

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Q5) a) Derive the formula to calculate discharge of a well in a confined aquifer and unconfined aquifer. **[10]**

b) Write the preventive and curative measures of water logging. Explain tile drain method and also state the formula for spacing of tile drains. **[3+5]**

OR

Q6) a) A 30 cm well completely penetrates an unconfined aquifer of saturated depth 40m. After a long period of pumping at steady rate of 1500 lpm, the drawdown in two observation wells 25 and 75m from the pumping well were found to be 3.5 and 2 m respectively. **[5+5]**

i) Determine the transmissivity of the aquifer.

ii) What is the drawdown at pumping well?

b) What is Participatory Irrigation Management (PIM)? What is co-operative water distribution systems. **[4+4]**

Q7) a) Write the advantages and disadvantages of PDN over conventional canal distribution network. **[10]**

b) Differentiate between surface irrigation and subsurface irrigation and explain sprinkler irrigation in detail. **[7]**

OR

Q8) a) State various methods of canal revenue collection and explain any two in detail. **[10]**

b) What is micro irrigation and what are its advantages compared other methods of irrigation. **[3+4]**

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