**18CE505**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular / Supplementary) DEGREE EXAMINATION** | | | |
| **January, 2022** | **Civil Engineering** | | |
| **Fifth Semester** | **Water resources engineering** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (1X10 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |

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| 1. | a) | What is unit hydrograph? | CO1 |  |
|  | b) | Describe in brief hydrologic cycle. | CO1 |  |
|  | c) | What is aquiclude? | CO2 |  |
|  | d) | What is radius of influence? | CO2 |  |
|  | e) | Define the term “critical velocity ratio”. | CO2 |  |
|  | f) | Differentiate between initial and final regime? | CO2 |  |
|  | g) | What is the necessity of lining of irrigation canals? | CO3 |  |
|  | h) | What are the common types of flexible outlets? | CO3 |  |
|  | i) | Define field capacity | CO4 |  |
|  | j) | What is base period? | CO4 |  |
| **Unit -I** | | | | |
| 2. | a) | Describe the principle of working of a floating type recording rain gauge with a neat sketch? | CO1 | 5M |
|  | b) | Explain the factors affecting runoff. | CO1 | 5M |
| **(OR)** | | | | |
| 3. | a) | Explain various components of a single peaked storm hydrograph. | CO1 | 5M |
|  | b) | Describe the step by step procedure of the derivation of a unit hydrograph from an isolated storm? | CO1 | 5M |
| **Unit -II** | | | | |
| 4. | a) | Derive an expression for the steady state discharge of well fully penetrating into a confined aquifer. | CO2 | 5M |
|  | b) | During a recuperation test, the water in an open well was depressed by pumping by 2.5m and it recuperated 1.8 meters in 80 minutes. Find yield from a well of 4m diameter under a depression head of 3 meters | CO2 | 5M |
| **(OR)** | | | | |
| 5. | a) | Design an irrigation channel to carry a discharge of 14 cumecs. Assume N=0.0225, m=1 and B/D=5.7. | CO2 | 5M |
|  | b) | Compare Kennedy’s and Lacey’s silt theories .Why lacey’s theory is superior to that of Kennedy’s theory | CO2 | 5M |
| **Unit -III** | | | | |
| 6. | a) | Design a trapezoidal shaped concrete lined channel to carry a discharge of 40 cumecs at a slope of 10cm/km. The side slopes of the channel are 1.5:1. The value of N may be taken as 0.015. Assume limiting velocity as 1.5m/s. | CO3 | 5M |
|  | b) | What do you understand by a head regulator? State functions of a distributary head regulator and a cross-regulator? | CO3 | 5M |
| **(OR)** | | | | |
| 7. | a) | Describe various types of falls with neat sketches. | CO3 | 5M |
|  | b) | Explain various causes of water logging? | CO3 | 5M |
| **Unit -IV** | | | | |
| 8. |  | Find Discuss in brief about various methods of surface irrigation? | CO4 | 10M |
| **(OR)** | | | | |
| 9. | a) | Explain various factors affecting duty. | CO4 | 5M |
|  | b) | A field channel has culturable commanded area of 2000 hectares. The intensity of irrigation for Gram is 30% and for wheat is 50%. Gram has a kor period of 18 days and kor depth of 12cm, while wheat has a kor period of 15 days and kor depth of 15cm. Calculate the discharge of the field channel. | CO4 | 5M |

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