Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **18CE3053** | **Duration :** | **3hrs** |
| **Sub. Name :** | **DESIGN OF HYDRAULIC AND CONVEYANCE STRUCTURES** | **Max. marks :** | **100** |

**ANSWER ANY FIVE QUESTIONS (5 x 16 = 80 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Differentiate between weir and barrage. Explain with neat sketch. | CO2 | 10 |
| b. | Enumerate about the diversion head works and indicate various components of the system and its function. | CO4 | 10 |
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| 2. | a. | Paraphrase the suitable conditions for dam site. | CO1 | 10 |
| b. | List the measures to control seepage in earth dams? | CO1 | 10 |
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| 3. | a. | Demonstrate the energy dissipation arrangements made below a spillway. | CO1 | 10 |
| b. | Elaborate the design principles that are involved in the design of a Ogee spillway. | CO1 | 10 |
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| 4. | a. | Discuss the design principles of channels by Kennydy’s methods. | CO4 | 5 |
| b. | Identify fall. When is it necessary to construct a fall? | CO2 | 5 |
| c. | Explain canal lining and state the economic benefits. | CO3 | 10 |
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| 5. |  | A pipe network with two loops is shown in the Figure. Determine the flow in each pipe for an inflow of 5 units at the junction A and outflows of 2.0 units and 3.0 units at junctions D and C respectively. The resistance R for different pipes are shown in the figure. | CO3 | 20 |
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| 6. | a. | List the different causes of failure of an earth dam. | CO1 | 8 |
| b. | Design an irrigation channel based on Kennedy’s theory with the following details Discharge : 60 cumec  Bed Slope : 1 in 6000  Critical Velocity Ratio m : 1.05  Rugosity coefficient : 0.02 | CO4 | 12 |
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| 7. | a. | Outline Khosla’s theory on the design of weirs on permeable foundation. Enumerate various corrections that are needed in the application of this theory. | CO4 | 15 |
| b. | Narrate the design principle of a channel using Lacey’s method. | CO4 | 5 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | The runoff river hydropower plant has inflow of 30 cumecs and it works on head of 50 m with a provision for pondage to meet daily demand with load factor of 75%. Determine the power generation capacity of plant at 85% overall efficiency. What amount of pondage is needed if the plant operates at the peak station for six hours? | CO5 | 10 |
| b. | Define and derive an expression for the celerity of wave in power canal. | CO6 | 10 |