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



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

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| **Code :** | **18CE3055** | **Duration :** | **3hrs** |
| **Sub. Name :** | **HYDRO POWER ENGINEERING** | **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. | Recall Hydro-power? Discuss the relative merits and demerits of hydropower as compared to other powers. | CO1 | 10 |
| b. | Is the hydropower generation affects with the present trends in ‘energy use’ patterns? If yes, then elaborate it in detail with suitable examples | CO1 | 6 |
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| 2. | a. | Outline the basic features of a pumped storage plant. | CO3 | 8 |
| b. | Elaborate the advantages and disadvantages of base load plant. | CO3 | 8 |
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| 3. | a. | Interpret celerity of wave in power canals? Derive an expression for the same. | CO3 | 8 |
|  | b. | Enumerate various types of spillways, and describe in detail the most widely used type with neat sketch. | CO4 | 8 |
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| 4. | a. | |  |  | | --- | --- | | Categorize the design criteria for non-embedded and embedded penstocks. |  | | CO3 | 10 |
|  | b. | List the classification of penstocks based on i) material of fabrication, ii) method of their support and iii) rigidity of connections and support | CO3 | 6 |
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| 5. | a. | Summarize the following losses at intakes: i)Entrance loss, ii)Rack loss and iii)Head gate loss. | CO5 | 8 |
|  | b. | Explain pressure shafts and trash racks. | CO5 | 8 |
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| 6. |  | |  |  | | --- | --- | | Appraise the equations for calculations of depreciation of plants in terms ofinitial plant cost, salvage value, amount of depression, life of plant years and annual interest rate in the following cases |  |   i)straight line method, ii) sinking fund method | CO2 | 16 |
|  |  |  |  |  |
| 7. | a. | Rephrase capacity factor, load factor and utilization factor | CO2 | 6 |
|  | b. | Relate the load curve and load duration curves? | CO2 | 10 |
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| **COMPULSORY QUESTION (1 x 20 = 20 Marks)** | | | | |
| 8. | a. | Justify the significance of diversity factor on the cost of hydropower generation. | CO5 | 10 |
|  | b. | Propose a typical layout of powerhouse and explain its components in short. | CO6 | 10 |