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



**End Semester Examination – Nov / Dec – 2019**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **16EE1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ELECTRICITY FOR ENGINEERS** | **Max. Marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Draw the layout of Hydro Power Plant and explain how electricity is generated in hydro power plant. | CO1 | 14 |
| b. | Image result for find the equivalent resistance when in seriesDetermine the equivalent resistance between the terminals A and B in the circuit shown below and also calculate the total current if the source is 30V.  B  A | CO1 | 6 |
| **(OR)** | | | | |
| 2. | a. | With the help of a block diagram, explain the working of Standalone Solar PV power plant. | CO1 | 15 |
| b. | State Kirchoff’s Laws. | CO1 | 5 |
|  |  |  |  |  |
| 3. | a. | Draw the one line diagram of a typical power supply system. Mark all the components. | CO1 | 6 |
| b. | Calculate the monthly electricity bill for a home with the following load specifications.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | S.No | Name of the Load | Quantity | Wattage | Operating  Hours | | 1 | Fluorescent lamp | 4 | 40W | 5 | | 2 | Ceiling Fan | 4 | 60 W | 10 | | 3 | Refrigerator (165 L) | 1 | 100 W | 23 | | 4 | Air Conditioner | 1 | 1500 W | 7 | | 5 | Mixer | 1 | 450 W | 2 | | 6 | LED Television | 2 | 100 W | 8 |   Assume the following EB tariff.   |  |  |  |  | | --- | --- | --- | --- | | Category | Units consumed | Cost/unit  (Rs/KWh) | Fixed  Charges | | Consumption  above 500 units | 0 – 100 units | 0 | Rs.50/service | | 101 – 200 units | 3.50 | | 201 – 500 units | 4.60 | | Above 500 units | 6.60 | | CO1 | 14 |
| **(OR)** | | | | |
| 4. | a. | Draw the wiring circuit of fluorescent lamp and stair case wiring and explain its working. | CO1 | 14 |
| b. | Compare overhead transmission line with underground cable system. | CO1 | 6 |
|  |  |  |  |  |
| 5. | a. | Discuss the operation of offline Uninterrupted Power supply with necessary diagrams. | CO1 | 10 |
| b. | List down the applications of Electric Heating. | CO1 | 5 |
| c. | Discuss the steps to convert existing home into smart home. | CO1 | 5 |
| **(OR)** | | | | |
| 6. | a. | List down the electrical hazards with the effects of electricity on human body and also discuss the electrical protective devices. | CO1 | 12 |
| b. | Explain the concept of self and mutually induced emf with a neat diagram. | CO2 | 8 |
|  |  |  |  |  |
| 7. | a. | Sketch the constructional diagram of a three phase induction motor and explain its operation. | CO2 | 10 |
| b. | Identify the reason(s) for the single phase induction being not self staring. List down the methods to overcome and explain in detail any one method with neat diagram. | CO2 | 10 |
| **(OR)** | | | | |
| 8. |  | Elucidate the construction and working of an Electric Vehicle with a neat sketch. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Construct a system that will automatically control the water level in overhead tanks. | CO3 | 10 |
| b. | Develop a system for irrigation which will perform its operation without manual interruption. | CO3 | 10 |