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



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

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| **Code :** | **14EE2016** | **Duration :** | **3hrs** |
| **Sub. Name :** | **POWER SYSTEM PROTECTION AND SWITCH GEAR** | **Max. Marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Classify the different types of faults. Discuss the nature and causes of fault and also write the consequences of faults on a power system. | CO2 | 20 |
| **(OR)** | | | | |
| 2. | a. | Consider a 3–phase transmission line operating at 70 kV and connected through a 1000 kVA transformer with 5% reactance to a generating bus-bar. The generator is of 3000 kVA with 10% reactance. Suppose a short-circuit fault between three phases occurs at the high voltage terminals of the transformers, show that the short circuit current is same whatever value of base kVA you may choose. | CO2 | 5 |
| b. | Write a detailed account on the current transformer and potential transformer and mention their applications in protection schemes. | CO2 | 15 |
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| 3. | a. | List out the essential qualities of protective relays. | CO1 | 5 |
| b. | Describe the different types of impedance relays with the help of their RX diagrams. | CO1 | 15 |
| **(OR)** | | | | |
| 4. | a. | With the help of a neat diagram, explain the construction, working  principle and advantages of buchholz relay. | CO1 | 10 |
| b. | Explain the protection of generator using differential protection scheme. | CO2 | 10 |
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| 5. | a. | Draw the block diagram of microprocessor based relay. Also state the merits of microprocessor based protection system. | CO1 | 10 |
| b. | Compare and contrast on the salient features of the oil circuit breaker with that of air blast circuit breaker. | CO1 | 10 |
| **(OR)** | | | | |
| 6. | a. | Suggest a suitable application of SF6 circuit breaker and explain its construction and working principle with a neat diagram. | CO1 | 15 |
| b. | State the merits and demerits of SF6 circuit breaker. | CO1 | 5 |
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| 7. | a. | With a graphical sketch, explain the following terms:  i) R.R.R.V ii) Arc Voltage iii) Recovery Voltage | CO2 | 10 |
| b. | Explain the different methods of grounding with a neat sketch. | CO3 | 10 |
| **(OR)** | | | | |
| 8. |  | Discuss briefly the lightning phenomenon and the lightning strokes.  Explain the commonly used equipments for protection against lightning. | CO3 | 20 |
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|  | | **Compulsory**: |  |  |
| 9. |  | Define basic impulse insulation level and explain in detail about insulation coordination with its volt-time curve. | CO3 | 20 |