Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 70565

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Sixth Semester

Electrical and Electronics Engineering

EE 8602 – PROTECTION AND SWITCHGEAR

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the significance of Ground Wire in Equipment Grounding.

2. What are the various methods of Back up Protection in Power system?

3. Draw the operating circuit of a relay.

4. Differentiate between balanced voltage relay and translay relay.

5. Give a basic diagram of Capacitor voltage transformer.

6. What are the problems encountered in Bus Bar Differential Protection Scheme?

7. State the principle of duality between amplitude and phase comparators.

8. What are the limitations of static relay?

9. Why is current interruption easier in an A.C. circuit than D.C. circuit?

10. Differentiate recovery and restriking voltage.

PART B — (5 × 13 = 65 marks)

11. (a) Illustrate the protective zones in a power system. What are the probable faults and abnormalities likely to occur in the above system. Explain the essential qualities required to protect the system for reliable power supply.

Or

(b) Define Neutral grounding. Explain the methods of neutral grounding employed in a three- phase system.

12. (a) Distinguish between the constructional details of induction disc relay. Explain the torque production with neat diagrams and equations.

Or

(b) What is impedance relay? Explain its characteristics with torque equations and R-X diagrams. Also show its directional property.

13. (a) Explain the working of current transformers and discuss any one of its applications to power system protection.

Or

(b) Describe the differential pilot wire protection of feeders.

14. (a) Enumerate the advantages and limitations of numerical relays over conventional relays. Explain numerical relay with a block diagram. How it is applied to differential protection?

Or

(b) Explain the static differential protection scheme. Illustrate its application power transformers with necessary circuit diagrams.

15. (a) Discuss the constructional details and operation of SF_6 Circuit Breaker. Analyze the relative merits and demerits of SF_6 gas with its properties.

Or

(b) Explain the phenomenon of arcing and the problems involved in arc interruption in detail.

PART C — (1 × 15 = 15 marks)

16. (a) How will you synthesize mho relay using static comparator?

Or

(b) Enumerate the protection involved in generator against stator and rotor faults.

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