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

Question Paper Code : 80509

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Seventh Semester

Electrical and Electronics Engineering

EE 2402/EE 72/10133 EE 702 – PROTECTION AND SWITCHGEAR

(Regulations 2008/2010)

(Common to PTEE 2402 for BE (Part–Time) Sixth Semester – Regulations 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What is the role of protection relay in a modern power system?
2. What is meant by pick-up current?
3. What is the principle of differential relay?
4. What are functions of protective relays?
5. What are the different types of zones of protection?
6. Write the inference of resistance switching.
7. What is meant by making capacity of a circuit breaker?
8. Why current chopping is not common in oil circuit breakers?
9. Write the operational difference between fuse and circuit breaker.
10. Enumerate the breaking capacity of circuit breaker.

PART B — ($5 \times 16 = 80$ marks)

11. (a) Explain different types of earthing the neutral point of the power system. Derive an expression for the reactance of the Peterson coil in terms of capacitance of the Protected line. (16)

Or

(b) (i) Explain the overlapping of protective zones with neat sketch. (9)

(ii) Classify the different faults in power system. Which of these are more frequent. (7)

12. (a) (i) Explain with the help of neat diagram the construction and working of induction type directional power relay. (8)

(ii) Draw and explain the block diagram of a static relay and state its advantages. (8)

Or

(b) What is universal torque equation? Using this equation derive the following operating characteristics.

(i) Impedance relay

(ii) Reactance relay

(iii) Mho relay (16)

13. (a) Briefly explain types of stator fault protection of Alternators. (16)

Or

(b) Explain the carrier current protection of transmission line with relevant diagrams. (16)

14. (a) (i) Derive the expressions for restriking and rate of rise of recovery voltages. (8)

(ii) Explain the operation of zero crossing in the circuit breaker. (8)

Or

(b) Write brief notes on:

(i) Current chopping.

(ii) Interruption of capacitive current. (8 + 8)

15. (a) With a neat block diagram explain the construction, operating principle and applications of SF_6 circuit breaker. What are its advantages over other types of circuit breakers? (16)

Or

(b) (i) Discuss the selection of circuit breakers for different ranges of system voltages. (8)

(ii) Discuss how breaking capacity and making capacity of a circuit breaker are tested in a laboratory type testing station. (8)

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