

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER M. TECH DEGREE EXAMINATION**

Electrical & Electronics Engineering

04EE6411—Advanced Relaying and Protection

Max. Marks: 60

Duration: 3 Hours

PART A

Answer All Questions

Each question carries 3 marks

1. Differentiate between “selectivity” and “sensitivity” of a protective relay with example
2. Explain the principle of operation of thermal relays.
3. Explain the operating principle of reactance relay.
4. What is split phase protection scheme for an alternator?
5. Briefly explain sampling theorem.
6. Differentiate between wire pilot scheme and carrier current scheme.
7. What are the precautions that must be followed in automatic reclosing?
8. List the criteria that must be considered when designing load-shedding schemes.

PART B

Each question carries 6 marks

9. Derive the ratio and phase angle errors of CT with the help of phasor diagram.
OR
10. Explain the classification of protective relays based on technology?
11. Derive the expression for the operating torque developed in induction relays.
OR
12. Explain in detail about any two types of coincidence type phase comparator.
13. The current rating of a relay is 5 A. PSM = 1.5, TMS = 0.4, CT ratio = 400/5, fault current= 6000 A. Determine the operating time of the relay.

PSM	2	4	5	8	10	20
Operating time in seconds	10	5	4	3	2.8	2.4

OR

14. Explain the operating principle and working of MHO relay
15. Explain what is magnetizing inrush current? Discuss the protective scheme employed for protection of transformer against magnetizing inrush current.
OR
16. What type of protective scheme is employed for protection of the field winding of the alternator against ground faults?
17. Explain the working of microprocessor based impedance relay with the help of block schematic diagram and program flowchart.
OR
18. Explain in detail about the protection schemes employed in induction motor against electrical faults.
19. Explain SCADA based protection system employed in power system.

OR

20. Explain different stages in testing of protection equipment.