

Code No: 156CM

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, August - 2022

POWER SYSTEM PROTECTION
(Electrical and Electronics Engineering)

Time: 3 Hours

Max.Marks:75

Answer any five questions
All questions carry equal marks

- 1.a) What are the different types of faults, causes of faults and their effects in a power system?
- b) How would you explain primary and back up protection and also explain various methods of back-up protection? [8+7]
- 2.a) How would you explain the essential qualities of protective relaying?
- b) How would you describe the microprocessor based over current relay and also write advantages of microprocessor based protective relay? [7+8]
- 3.a) IDMT relays are widely used for over current protection? Justify the statement with valid reasons.
- b) Distinguish between an earth fault relay and an over current relay. Discuss various methods to energies an earth fault relay. [7+8]
- 4.a) How would you discuss the effect of power surges on the performance of different types of distance relays?
- b) What are blinders? In what circumstances are they used in conjunction with a MHO relay? [7+8]
- 5.a) Explain the term 'pilot' with reference to power line protection. What are the different types of pilots which are presently employed? Discuss their fields of application.
- b) What is carrier aided distance protection? What are its different types? [8+7]
- 6.a) An 11 KV, 100 MVA alternator is grounded through a resistance of 5 Ω . The CTs have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1 A. What percentage of the generator winding will be protected by the percentage differential scheme of protection?
- b) What type of protective schemes is employed for the protection of a large power transformer against short circuits? With neat sketch, discuss its working principle. [7+8]
- 7.a) Illustrate how an amplitude comparator can be converted to a phase comparator and vice Versa.
- b) Describe the realization of a directional over current relay using a microprocessor. [7+8]
- 8.a) Illustrate the working principle of HRC fuse with a neat sketch.
- b) With a neat diagram, discuss the constructional and principle operation of SF₆ circuit breaker. What are its relative merits and demerits? [7+8]

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