

Code No: 137SD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, September - 2021

**SWITCH GEAR AND PROTECTION**  
(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

**Answer any Five Questions**  
**All Questions Carry Equal Marks**

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- 1.a) Explain the terms
  - i) Symmetrical breaking current
  - ii) Asymmetrical breaking current
  - iii) Making current
  - iv) Restriking voltage
  - v) Recovery voltage and
  - vi) Rate of rise of restriking voltage (RRRV).
- b) What are the special features of an auto reclosing circuit breaker? What are its advantages? [8+7]
2. Describe the construction, principle of operation and application of SF6 circuit breaker. How does this breaker essentially differ from an air blast breaker? [15]
3. Describe the construction and principle of operation of an induction type directional over current relay. [15]
- 4.a) Compare the characteristics of (i) impedance relay (ii) mho relay (iii) reactance relay.  
b) What are the merits and demerits of static relays over electro – magnetic relay? [8+7]
- 5.a) What is restricted earth fault protection for alternators? Why is this form of protection used for alternators even though it does not provide protection for the complete winding?  
b) Describe the important faults on an alternator and state the scheme of protection against these faults. [8+7]
- 6.a) Explain the Translay protection scheme for transmission lines..  
b) A 3- phase, 33/6.6KV, star/delta connected transformer is protected by Merz-price circulating current system. If the CTs on low voltage side have a ratio of 300/5, determine the ratio of CTs on high voltage side. [8+7]
- 7.a) Discuss ungrounded or isolated neutral system. What are its disadvantages?  
b) What is solid grounding? What are its advantages? [7+8]
- 8.a) Explain the causes of over voltages in power systems.  
b) Explain the construction, principle and working of a valve type arrester. [7+8]

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