

B.E. Seventh Semester (Elect Engg (E & P), Ele and Electro, Ele & Power, Ele. Energy) (CGS)  
**10460 : Switchgear and Protection**  
7 EE 04 / 7 EP 04 / 7 EL 04

P. Pages : 2

Time : Three Hours



AU - 2906

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
  2. Assume suitable data wherever necessary.
  3. Diagrams and chemical equations should be given wherever necessary.
  4. Illustrate your answer necessary with the help of neat sketches.
  5. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION – A**

1. a) What do you mean by Transient Recovery Voltage (TRV)? Derive an expression for RRRV. 7  
b) Explain the phenomenon of current chopping. 7

**OR**

2. a) Explain types of Auto-reclosing and its advantages. 7  
b) Explain the arc zero current interruption theories. 7  
3. a) What is fuse? List out and discuss the advantages and disadvantages of fuse. 7  
b) Describe the construction and working of air circuit breaker with its advantages and disadvantages. 6

**OR**

4. a) Describe construction and working of minimum oil circuit breaker with neat sketches. 7  
b) Write short notes on H.R.C. Fuse. 6  
5. a) Explain the construction and working of vacuum circuit breaker. 7  
b) State and explain the properties of SF<sub>6</sub> gas that make it more useful for circuit breaking. 6

**OR**

6. a) Explain in detail working of earth leakage circuit breaker. 7  
b) Write short note on 6  
i) Development test  
ii) Reliability test.  
iii) Commissioning test.

**SECTION – B**

7. a) Explain what is meant by primary protection and backup protection. 7  
b) Describe the essential qualities of protective relay. 6

**OR**

8. a) Explain the operating principle of differential relay with neat diagram. 7  
b) How CT's and PT's useful in protection scheme? 6
9. a) Describe the three stepped distance protection of transmission line with suitable characteristics. 7  
b) Write short note on 7  
i) Time graded protection.  
ii) Current graded protection.

**OR**

10. a) Discuss briefly the advantages and disadvantages of pilot wire differential protection of long transmissions lines. 7  
b) Explain in detail, the carrier current relaying used in protection schemes. 7
11. a) Briefly explain the block diagram of a static relay and give the application. 7  
b) Describe a Buchholz relay and discuss its merits and demerits. 6

**OR**

12. a) Explain in detail loss of prime mover and protection against this. 7  
b) Discuss the advantages and disadvantages of static relay as protective devices. 6

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