6TH. SEM./ELE./ ELE. & MECH./ELE. AND ETC./EE(I & C)/ 2024(S)
Th-2 Switchgear & Protective Device

Full Marks: 80   **Time- 3 Hrs**

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks & Use Calculator

1. Answer **All** questions   2 x 10
    a. Define Plug Setting Multiplier.
    b. What is Symmetrical Fault?
    c. Write the formula of percentage reactance in terms of Base KVA.
    d. Define Restriking Voltage and recovery voltage?
    e. Why earth wire is provided in overhead transmission line?
    f. Define Fuse & write at least two desirable characteristics of fuse.
    g. What is fusing factor?
    h. Name the type of relay used to protect the long distance transmission line.
    i. What are the devices that commonly used for protection against lightning surges?
    j. Define Short Circuit KVA.

2. Answer **Any Six** Questions   6 x 5
    a. What is lightning Arrestor and explain how horn Gap arrestor is protecting the system against lightning?
    b. Describe the construction & working principle of Induction type non-directional over current relay.
    c. Explain types of reactor used in transmission system to limit the short circuit current.
    d. Describe the different method of Arc Extinction of Circuit Breaker.
    e. Describe different types of bus bar arrangement system used in substation.
    f. Write the difference between fuse and circuit breaker.
    g   Write short notes on differential Relay.

3   Describe the construction details & operation of induction type over current relay.   10

4   Explain transformer protection using differential protection method (Merz-Price Protection).   10

5   Describe the construction details & operation of Vacuum Circuit Breaker With merit and demerit.   10

6   The section bus-bars A and B are linked by a bus bar reactor rated at 5000KVA with 10% reactance. On bus-bar A, there are two generators each of 10,000 KVA with 10% reactance and on B, two generators each of 8000 KVA with 12% reactance. Find the steady MVA fed into a dead short circuit between all phases on B with bus-bar reactor in the circuit.   10

7   Write short note on   5+5
    a) Static Relay
    b) IDMT Relay