Q.P.Code: **20EE0232** | R20 | **H.T.No.**

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)
**B.Tech. IV Year I Semester Regular & Supplementary Examinations October/November-2025**
**POWER SYSTEMS PROTECTION**
(Electrical & Electronics Engineering)

**Time: 3 Hours** **Max. Marks: 60**

(Answer all Five Units **5 x 12** = **60** Marks)

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 1 | | Write short notes on the following.<br>(i) Resistance switching (ii) Current chopping (iii) Circuit breaker. Explain its function. | CO1 | L1 | 12M |
| | | **OR** | | | |
| 2 | | Explain the operation of Minimum oil Circuit Breaker with diagram. | CO2 | L1 | 12M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 3 | a | What is protective relay? Discuss the basic requirements of relay. | CO3 | L1 | 6M |
| | b | Explain the constructional details and operation of attracted armatures relay. | CO3 | L1 | 6M |
| | | **OR** | | | |
| 4 | a | Explain the significance of primary and back up protection. | CO3 | L1 | 6M |
| | b | Classify the various types of the over current relays and give their applications along With characteristics. | CO3 | L2 | 6M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 5 | a | Explain protection of generators in abnormal conditions. | CO4 | L2 | 6M |
| | b | Explain internal faults inside the transformer. | CO4 | L2 | 6M |
| | | **OR** | | | |
| 6 | a | Describe the protection of the stator windings of 3-phase alternator against turn-to-turn faults. | CO4 | L1 | 6M |
| | b | Calculate the required value of neutral resistance for a 3-phase11kv alternator so as to protect 70% of the winding against earth-fault by a relay with pick-up current of 1A. The neutral CT has a ratio of 250/5. | CO4 | L3 | 6M |

**UNIT-IV**

| | | | | | |
|---|---|---|---|---|---|
| 7 | a | Elaborate on various methods for protection of feeders. | CO5 | L1 | 6M |
| | b | What is the importance of bus-bar protection? What are the requirements of protection of lines? | CO5 | L1 | 6M |
| | | **OR** | | | |
| 8 | a | Explain in detail about the time graded and current graded system. | CO5 | L1 | 6M |
| | b | Explain the construction and principle of operation of a translay relay. | CO5 | L1 | 6M |

**UNIT-V**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | Discuss the phenomena of a lightning stroke. | CO6 | L1 | 6M |
| | b | Explain the working of valve type lightning arrester. | CO6 | L1 | 6M |
| | | **OR** | | | |
| 10 | | Write short notes on the following:<br>(i) Causes of over voltages in power systems.<br>(ii) Basic impulse level and its significance. | CO6 | L1 | 12M |

*** END ***