

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. IV Year I Semester Regular & Supplementary Examinations December-2024
POWER SYSTEMS PROTECTON
(Electrical & Electronics Engineering)

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

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

UNIT-I

1 a For a 132kv system, the reactance and capacitance up to the location of a C.B is 3Ω . And $0.015\mu F$ respectively. Calculate the frequency of transient oscillations. CO1 L3 6M

b What is circuit breaker? Explain its function with a neat diagram. CO1 L2 6M

OR

2 a Discuss the different methods of "ARC" extinction CO1 L1 6M

b Write short notes on the following. CO1 L2 6M

(i) Resistance switching

(ii) Current chopping.

UNIT-II

3 a Explain differential relay in detail. CO3 L2 6M

b Derive the expression for torque developed in induction relay. CO3 L3 6M

OR

4 a Explain the working of a static over current relay. CO3 L1 6M

b Explain the constructional details and operation of attracted armatures relay. CO3 L1 6M

UNIT-III

5 a Calculate the required value of neutral resistance for a 3-phase 11kv alternator so as to protect 70% of the winding against earth-fault by a relay with pick-up current of 1 A. The neutral CT has a ratio of 250/5. CO4 L3 6M

b Explain internal faults inside the transformer CO4 L2 6M

OR

6 Explain the significance for the protection of transformers and explain the Buchholz relay protection with neat block diagram. CO4 L1 12M

UNIT-IV

7 a Write short notes on the Fault bus protection CO5 L1 6M

b Elaborate on various methods for protection of feeders. CO5 L1 6M

OR

8 a Discuss the importance of Bus bar protection CO5 L1 6M

b Explain in detail about the Merz price voltage balanced system with a neat single line diagram. CO5 L1 6M

UNIT-V

9 a Discuss and compare the various methods of neutral earthing explain. CO6 L2 6M

b Describe the construction & principle of operation of valve type lightning arrester. CO6 L1 6M

OR

10 a With a neat diagram explain the operation of any one type of lightning arrester. CO6 L3 6M

b Discuss the phenomena of a lightning stroke. CO6 L1 6M

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