

Roll No.

24319

B. Tech 6th Semester (EEE)

Examination – May, 2018

POWER SYSTEM-II

Paper : Explain-312-F

Time : Three Hours]

[Maximum Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Question 1 is compulsory and attempt any *one* questions from each Section.

1. (a) Explain Energy Balance theory. 5 × 4 = 20
- (b) Define pick up value and plug setting multiplier.
- (c) Write a note on 'Zones of infection'.
- (d) What are sequence Impedances and sequence networks ?
- (e) Define Subtransient reactance. What is the significance of sub transient reactance in short circuit studies ?

SECTION - A

2. (a) A 3 Phase, 11 KV, 10 MVA altimeter has sequence reactance of $X_0 = 0.05 p.u.$, $X_1 = 0.15 p.u.$ and $X_2 = 0.15 p.u.$ Id generator is on no load, find ratio of fault current for L-G fault to that when all the 3 phases are dead short circuited. Assume L-G fault occurs on Red phase and $\overline{E_R} = 1 p.u.$ 10
- (b) Considering short circuit transient on transmission line, derive the equation for maximum momentary short-circuit current. 10
3. What is 3-phase unsymmetrical fault ? Discuss different types of unsymmetrical faults that can occur on 3-d system. 20

SECTION- B

4. (a) Discuss the phenomenon of :
- (i) Current chopping
 - (ii) Resistance Switching
- (b) Discuss the principle of operation of an air-blast circuit breaker. What are the advantages and disadvantages of using air as an arc quenching medium ? 10
5. Discuss important faults of transformer Describe combined leakage and overload protection of transformer, in detail. 20

SECTION - C

6. (a) Derive the equation of torque developed in an induction relay. 10
- (b) Differentiate primary and back up protection. What is the role of back up protection? What are the various methods of providing back up protection? 10
7. (a) Describe operating principle and area of application of directional over current relay. 10
- (b) Describe differential pilot wire method of protection of feeders. 10

SECTION - D

8. (a) Explain optical fiber link based relaying schemes. 10
- (b) Compare digital and conventional relay technique in detail. 10
9. (a) What do you understand by amplitude and phase comparator? Prove duality between them with the help of phasor diagram. 10

- (b) What are the applications of microprocessor in the field of power system protection? Explain any one type of relaying scheme based on microprocessor. 10