

C.U. SHAH UNIVERSITY

Winter Examination-2018

Subject Name: Power System Protection

Subject Code: 4TE07PSP1

Branch: B.Tech (Electrical)

Semester: 7

Date: 04/12/2018

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
 - (2) Instructions written on main answer book are strictly to be obeyed.
 - (3) Draw neat diagrams and figures (if necessary) at right places.
 - (4) Assume suitable data if needed.
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- Q-1** **Attempt the following questions:** **(14)**
- a)** Which component ensures the safety of the line from damage? **(1)**
 - (a) Relay
 - (b) Circuit breaker
 - (c) Bus bar
 - (d) Current transformer.
 - b)** Protective relays can be designed to respond to _____ **(1)**
 - (a) Light intensity, impedance
 - (b) Temperature, resistance, reactance
 - (c) Voltage and current
 - (d) All of these.
 - c)** What is the actuating quantity for the relays? **(1)**
 - (a) Magnitude
 - (b) Frequency
 - (c) Phase angle
 - (d) All of these.
 - d)** The tripping circuit is _____ **(1)**
 - (a) AC
 - (b) DC
 - (c) Either AC or DC
 - (d) None of these.
 - e)** What is need of protective system? **(1)**
 - f)** Give the name of different types of unsymmetrical faults. **(1)**
 - g)** Define the term under reach. **(1)**
 - h)** Write definition of plug setting multiplier. **(1)**
 - i)** Define the term auto reclosing. **(1)**
 - j)** Draw the diagram of current transformer and potential transformer. **(1)**
 - k)** Define the term time multiplier setting. **(1)**
 - l)** Draw the figure of earth fault protective schemes. **(1)**
 - m)** What is the function of buchholz relay? **(1)**



- n) Define reset time of relay. (1)

Attempt any four questions from Q-2 to Q-8

- Q-2 Attempt all questions (14)**
- a) Discuss the essential qualities of a protection system. (7)
 - b) What do you understand by a zone of protection? Discuss various zones of protection for a modern power system. (7)
- Q-3 Attempt all questions (14)**
- a) Explain the function of below mention relay: (7)
(1) Definite time over current relay (2) Instantaneous Over current relay
(3) Inverse time over current relay (4) I.D.M.T. relay.
 - b) Write merits and demerits of static relay. (7)
- Q-4 Attempt all questions (14)**
- a) Explain below mention over current protective scheme: (7)
(1) Time graded system (2) Current graded system (3) Combination of current and time grading.
 - b) Derive the equation of induction relay torque. (7)
- Q-5 Attempt all questions (14)**
- a) What is the function of impedance relay? Explain operating principle and characteristics of impedance relay. (7)
 - b) Write a note on reactance relay. (7)
- Q-6 Attempt all questions (14)**
- a) Discuss the protection of parallel feeders and ring mains. (7)
 - b) Write a note on sampling theorem. (7)
- Q-7 Attempt all questions (14)**
- a) Give various protective schemes of generators and explain stator protection of generators. (7)
 - b) Write types of faults encountered in transformers and explain percentage differential protection of transformer. (7)
- Q-8 Attempt all questions (14)**
- a) Write and explain testing methods and commissioning of relay. (7)
 - b) Draw and explain schematic diagram of phase comparison carrier current protection. (7)

