

Chapter 3 Test: Substations

Instructor: Drew Lindsey _____ Name: _____

Class: ELT 211 _____ Date: _____

Carefully read each question, and circle the letter next to the correct answer.

1. Which is not a substation function?
 - a. Changing voltage
 - b. Interrupting circuits
 - c. Establishing circuits
 - d. Generating electricity

2. At what voltage range do subtransmission substations typically step voltages down to?
 - a. 2400/4160Y to 35KV
 - b. 35KV to 161KV
 - c. 138 KV to 765KV
 - d. None of the above

3. Where are distribution substations usually located?
 - a. In sparsely populated areas
 - b. Near power plants
 - c. In densely populated areas
 - d. Near hydroelectric dams

4. If power transformers in substations do not have automatic tap changing under load equipment, what is usually necessary to install?
 - a. Capacitors
 - b. Voltage regulators
 - c. SF₆ circuit breakers
 - d. Batteries

5. What do steel structures inside substations NOT provide support for?
 - a. Insulators
 - b. Buses
 - c. Disconnect switches
 - d. Control house

6. What type of circuit breakers can be found inside substations?
 - a. SF₆
 - b. Oil
 - c. Vacuum
 - d. All of the above

7. What do lightning arrestors protect equipment from?
 - a. Switching surges
 - b. Lightning strikes
 - c. Neither a or b
 - d. Both a and b

8. Coupling capacitors perform what function?
 - a. Correct power factor
 - b. Interrupt overload current
 - c. Protect apparatus from surge voltages
 - d. Transmit communication signals

9. Potential transformers reduce voltage proportionally and deliver a low voltage signal to what apparatus?
 - a. Voltage regulators
 - b. Relays
 - c. Meters
 - d. Both b and c

10. What apparatus reduces the magnitude of amperes flowing in a high voltage conductor proportionally to a level that can be connected to low voltage metering circuits?
 - a. Potential transformer
 - b. Current transformer
 - c. Disconnect switches
 - d. Shunt reactors

11. What is used to protect the electrical system from faults in equipment such as potential transformers or power transformers?
 - a. Meters
 - b. High voltage fuses
 - c. Disconnect switches
 - d. Insulators

12. What equipment provides a weather proof housing for circuit breakers, protective relays, meters, current transformers, potential transformers, bus conductors, and other items to provide electric system requirements?
 - a. Metal clad switchgear
 - b. Microwave equipment
 - c. Remote terminal unit
 - d. Converter stations

13. What piece of equipment is used to identify electrical failures on transmission and distribution circuits, or in pieces of equipment, and operate its contacts to properly identify the source of trouble and remove it from the electrical system?
- Meter
 - Digital fault recorder
 - Relay
 - Current transformer
14. What permits remote control of substations from a system control center or other selected point of control?
- Supervisory control
 - Converter stations
 - Circuit breakers
 - Shunt reactors
15. What equipment records fault data and provides an accurate sequence of events for system disturbances on the electric system?
- Meters
 - Power transformers
 - Digital fault recorder
 - Capacitors
16. What are capacitors installed to help neutralize?
- Capacitive reactance
 - Inductive reactance
 - Bipolar atrophy
 - The Doppler effect

17. What equipment maintains the system voltage on a distribution circuit?

- a. Microwave Equipment
- b. Voltage regulators
- c. Power line carrier equipment
- d. Batteries

18. What makes it possible to operate equipment during periods of system disturbances and outages?

- a. A DC control system
- b. Relays
- c. Control batteries
- d. Both a and c

19. What is the interface between substation equipment and supervisory control?

- a. Shunt reactor
- b. Flux capacitor
- c. Remote terminal unit (RTU)
- d. SF₆ circuit breaker

20. What is the function of a converter station?

- a. To change AC to DC
- b. To Change DC to AC
- c. Neither a or b
- d. Both a and b