Pretest Questions from Info Sections 1810

1810.01

1. What is the purpose of protection and control? Minimize damage to equipment and protect personal from injury.

2. What are some of the most common types of switchgear protection? Phase-loss angle protection, overcurrent protection, under-frequency protection, under-voltage protection, transformer temperature protection, and ground-fault protection.

3. What device is typically used to trip a breaker from a remote location? Shunt trip

4. What other protection is provided with phase-loss protection? Rotation

5. How does a current imbalance relay work? All three phases of the load go through one current transformer canceling out effects. As an imbalance occurs it creates a current in the secondary of the transformer and uses a shunt trip to open the circuit.

6. What is the purpose of overcurrent relays? Provide overload and overcurrent protection.

7. Which type of protection allows an operator to decide if the system is to be shut down? Under-frequency protection.

8. What device typically supplies undervoltage relays and how do they shut down the system? Potential transformers

9. How would continued operation at high temperatures affect transformers? Insulation breakdown

10. What device is used to sense transformer temperatures? Thermistor

11. What device is similar to a ground-fault relay? Current-imbalance relay

12. What device is typically found on a ground-fault relay that is not on a ground-fault receptacle? Timer

13. What are some of the considerations when selecting protective devices? Voltage of switchgear, KVA rating, Indoor or outdoor, types of loads, auxiliary equipment.

14. What is switchgear control? All protective devices installed.

1810.02
1. What function of circuit breakers is not a function of fuses? Closing a circuit.

2. What are the two most common ratings for fuses and circuit breakers? Amperage and Voltage.

3. What size switch is required for a 250A, 240V fuse? 400A

4. What size switch is required for a 700A fuse? 800A

5. Which fuses are typically bolted in place? Larger current

6. What is a bus fuse? Small glass fuse similar to auto fuse.

7. What are the three most common types of high-voltage fuses? Expulsion type, Liquid-filled, Solid-materials fuse.

8. Describe an expulsion fuse. Depend on vaporization of fuse element and tube liner to expel conducting metals from the tube.

9. Describe a liquid filled fuse. Depends on a spring mechanism to quickly separate the ends of the melted fuse element.

10. Describe a solid materials fuse. Extinguishes the arc in voids within the fuse body. Contains a solid arc extinguishing material.

11. What is the difference between a QOB and a QO breaker? Bolt-on

12. What does “trip free” mean on a breaker? You can’t hold it on in a trip circuit condition.

13. What is a “stored-energy” mechanism? Spring-loaded mechanism that opens or closes the switch fast regardless of handle speed.

14. What is the purpose of the settings on the face of breakers? Vary the time/current characteristic.

15. What is a shunt trip device and what are the two main types? Magnetic coil installed in a breaker for the purpose of opening the breaker electrically.

**Switchgear**

1. Where are circuit protective devices and switchgear required? At each point where current capacity or voltage rating changes.
2. What types of devices are typically found in switchboards? **Switching, measuring, controlling, protective devices, and busses.**

3. Which type of device has components which can typically be pulled out for maintenance and service? **Switchgear**

4. What is the main difference between metal-clad and metal-enclosed switchgear? **Metal-clad** has a separate section for each feeder and separations between sections so faults are localized. **Metal-enclosed** typically has draw-out sections faults are not localized.

5. Which section of the CEC deals with the installation of switchgear? **Section 26**

6. When should maintenance begin for switchgear? **When it is received.**