Chapter 3 Electrical Motor Controls

1. What is purpose of the NEC and the CEC? Protect persons and property
2. When installing a fuse which end should be installed first? Line or load
3. What parts of an electrical system are required to be grounded? Non-current carrying (non-energized) conductive
4. Which class fire extinguisher is to be used for an electrical fire? Class C
5. Why is it recommended to work with one hand on live electrical equipment? Prevent a shock from passing through the heart and lungs
6. What is a “Qualified” person with regard to electrical work? Person trained with special knowledge of construction and operation of electrical equipment or task. Also trained to recognize and avoid hazards
7. What are the three most common safety label signal words? Danger, warning and caution
8. What are the three most common colors for safety labels? Red, orange, and yellow
9. At what level is a shock likely to be painful with an inability to let go? 15-20 mA
10. What is the purpose of the third (green) wire in a cord for a power tool? Provide a path for current to flow to ground so the overcurrent device will trip
11. If power can’t be quickly be turned off when a person is receiving a shock what is the next step? Carefully and safely remove the victim from the source. (Use insulated protective equipment or dry wood)
12. What are some common methods of “Grounding”? Underground water pipe (metallic), frame of a building, concrete cased electrode, rod electrode, or grounding ring.
13. Where is a main bonding jumper found? Main Service Entrance Switch
14. How much current will cause a GFCI breaker to trip? More than 5 mA
15. Will a GFCI trip when an electrician comes in contact with an ungrounded conductor and the grounded (neutral) conductor? No (Only faults to ground)
16. What are two causes of high-voltage transient surges? Lightening and motor switching
17. What is the minimum category rating for a meter to test three-phase service equipment indoors? Cat III
18. What is the minimum category rating for a meter to test appliances and portable tools? Cat II
19. What is the minimum category rating for a meter to test outside service entrance? Cat IV
20. Why is using one hand recommended when working around live electrical equipment? Keep shock from passing through heart and lungs
21. What are the two hazards associated with working around motors? Live electrical circuit and rotating shaft
22. What are three materials used for arc-resistant clothing? Nomex, Basofil, and Kevlar
23. What are some of the synthetic materials that must not be worn when working around live, high-voltage circuits? Nylon, polyester, and rayon
24. What is an arc flash? Extremely high-temperature discharge produced by an electrical fault in the air
25. What is an arc blast? The explosion that occurs when the air surrounding electrical equipment becomes ionized and conductive
26. Which common task is often associated with arc flash? Measuring voltage with a DMM
27. What piece of equipment is often used to protect workers from adjacent live electrical circuits when working on a de-energized circuit? Insulating blanket
28. Which hardhat class offers the highest voltage protection? Class E
29. What does eye protection include for PPE? Safety glasses, goggles, face shields, and arc blast hoods
30. What is the purpose of the tinting on safety glasses and goggles? Protect against low-voltage arc hazards
31. Why should pitted or scratched lenses in safety glasses be replaced? May fail on impact
32. What two things do the severity of hearing loss depend on? Intensity and duration of exposure
33. What is indicated by NRR 27 on ear muff hearing protection? Noise reduction rating of 27 decibels (90-27=63) When tested in the factory
34. What color is the label on rubber insulating gloves for working on 16,000 V? Yellow
35. What color is the label on rubber insulating gloves for working on 6,000 V? White
36. Are leather protectors rated for voltage? No
37. What are the two parts to a field test for rubber insulating gloves? Visual and air tests
38. What is the proper procedure for gloves that fail a field test? Tagged as unsafe and returned to a supervisor
39. Safety shoes with steel toes protect from what two types of injuries? Compression and impact
40. What is the proper method for one person carrying lengths of conduit? Tipped down in front
41. What are two precautions when lifting? Lift with the legs and keep load close to body
42. What are the two types of rubber insulating matting? Type 1 natural rubber and Type 2 elastomer compound
43. What are three types of power that must be locked out before working on equipment? Electrical, hydraulic and pneumatic
44. Who is authorized to remove a lockout/tagout on a piece of equipment? Person who installed it or in emergency or that person is not there supervisor
45. When is a tagout used alone? Lock will not fit on disconnecting device
46. What is the purpose of a lockout/tagout hasp? Allow more than one lock to be installed
47. Where should rags containing alcohol or gasoline be stored? Covered metal container
48. What are the four classes of fires? A. Combustibles (ordinary) B. Flammable liquids C. Electrical Equipment D. Combustible metals E. Commercial cooking grease
49. What are the three components necessary for a fire? Fuel, heat, and oxygen
50. Which class fire extinguisher would be used on a fire in a conveyor motor? Class C
51. What are the three classifications of hazardous areas? Class, Division, Group
52. What is the term used to describe an area large enough and so configured that a person may enter and perform assigned work, that has limited or restricted means for entry and exit, and is not designed for continuous occupancy? Confined Space
53. What are the three types of air hazards in a confined space? Oxygen deficiency, combustible gasses, and toxic gasses
54. What class and division are given to an area where gasoline is stored in closed containers and occasionally transferred between containers? Class 1 Division 2
55. What class and division are given to an area where grain products are pulverized? **Class 2 Division 1**

56. What is the term used to describe a confined space that does not contain, or have the potential to contain any hazards capable of causing death or serious physical harm? **Non-permit confined space**

57. What document must be posted at the entrance to a confined space or made available to entrants? **Entry Permit Procedures**

58. According to the CEC (Table 56), what is the minimum working clearance around equipment with exposed live parts if the voltage is 69,000V? **3 m**

59. What is the minimum vertical ground clearance (CEC Table 34) for open line conductors on a 50 kV system? **7.6 m**