Unit 18 EWR

Oil and Gas Heating Systems

1. What are the two main types of oil and gas home heating systems? **Warm air and Hot water**
2. What are the two main tasks for electricians when installing a packaged heating unit? **Install the thermostat wiring and connecting power to the unit**
3. Which component in a hot water heating system ensures the circulating water maintains a satisfactory temperature? **Aquastat**
4. Which component in a hot water furnace system will shut down the system if ignition is not achieved after startup? **Cad cell**
5. What are some other names for the combustion head in a furnace? **Turbulator, fire ring, retention ring and end cone**
6. What functions of a furnace are controlled by a microprocessor controller? **Oil valve, motor, ignition, flame detector, thermostat command**
7. Why does a blower fan control delay the blower for a few seconds when the burner starts? **So it doesn’t circulate cold air**
8. What device on a hot water furnace keeps water from circulating by gravity? **Flow valve**
9. What is the purpose of a heat exchanger? **Transfer heat from combustion to the air or water**
10. What is the action of a high-temperature limit control in a hot air furnace? **Shut down the burner**
11. What type of ignition is use on most energy-efficient gas furnaces? **Hot-surface ignitor**
12. What type of heating system involves circulating a hot liquid through a closed series of pipes? **Hydronic**
13. What type of ignition allows the device to be on when the burner is running? **Intermittent**
14. What type of ignition allows the device to be on only until flame is established? **Interrupted**
15. What is the name given to the system where a circuit board manages the sequence of events to allow the burner to operate safely? **Integrated control**
16. What is the action of a low-water control? **Shut down burner if low water**
17. How are different spray patterns created for oil furnaces? **Different nozzles**
18. Which furnace component monitors safety controls like the high-limit switch and flame detector? **Primary control**
19. How is water or steam flow to different parts of a building controlled? **Zone valves**
20. What are some of the safety controls on furnaces and boilers? **High-temperature limit switches, burner primary controls (flame detectors), pressure relief valves, and low water cut-offs**
21. When power is removed from a normally closed solenoid, how is the valve returned to the closed position? **Spring action**
22. What device is actually controlled by the low-voltage thermostat in a furnace? **Switching relay**
23. What happens on the cold end of a thermocouple when the opposite end is heated? **Electric current flows (very small amount)**
24. What is the term used to describe a group of thermocouples connected in series? **Thermopile**
25. What are some unsuitable locations for thermostats? Drafty areas, near pipes or ducts, near fireplaces, areas of direct sunlight, or outside walls

26. What precaution should be taken when installing a mercury-bulb thermostat? Perfectly level to be accurate

27. What should be done with a broken or worn out mercury thermostat? Take to recycle depot

28. What is the class given to a transformer on a furnace system? What section of the CEC deals with this type of wiring? Class 2 Section 16

29. What is the main characteristic of a self-generating system used on decorative gas fireplaces? Very low (millivolt) voltage components

30. Is a breaker in a panelboard suitable for use as a disconnecting means on a furnace circuit? Yes, if you don’t need to walk by the furnace to reach the breaker

31. How is a circuit classified as to whether it is class 1 or class 2? If a failure in it would introduce a direct life or fire hazard it is Class 1

32. Is control circuitry that is completely contained in the equipment Class 1 or Class 2 rated? Neither (not covered under section 16)

33. What is the maximum OC protection for No. 18 conductors in a Class 1 circuit when run between pieces of equipment? 5 A

34. What is the maximum VA rating of Class 1 extra-low voltage power circuits? 1000 VA

35. What is the maximum allowable ampacity for No. 22 Copper conductors (2 in a cable) in a Class 2 circuit? 2.5 A (Table 57)

36. What is the maximum allowable ampacity for No. 16 Copper conductors (2 in a cable) in a Class 2 circuit with an ambient temperature of 45 degrees C? 5.8 A (10x.58) (Table 57 & 5A)

37. Class 2 circuit conductors may be run in the same raceway as the power conductors if the insulation is rated at the same voltage as the power conductors. True or False