

# Practice Exam

As with the Chapter Review Tests and the Final Exam, the Practice Exam tests your understanding of the materials underlying the learning objectives. After you've reviewed your answers to the Chapter Review Tests, try your hand at this 50-question Practice Exam to become still more comfortable with taking a multiple-choice test. Remember, topics covered in this exam may likewise be covered in the Final Exam, but the wording of the questions will never be identical.



1. A wooden structural member built up of several layers of wood to make a thin sheet, with the grain of each layer running at right angles, is:
  - a. laminated timber.
  - b. treated lumber.
  - c. structural lumber.
  - d. plywood.
  
2. In a refrigeration system, the pressure on the discharge side of the compressor is called:
  - a. high-side pressure.
  - b. back pressure.
  - c. low-side pressure.
  - d. suction pressure.
  
3. Steel rods or bars are added to concrete to provide additional:
  - a. compressive strength.
  - b. weather resistance.
  - c. tensile strength.
  - d. insulation.
  
4. In conference rooms, auditoriums, and other areas of assembly, the most significant heat gain is from:
  - a. lighting.
  - b. ventilation.
  - c. equipment.
  - d. people.
  
5. (Fill in the blank) In calculating their time estimation for the project, the painting crew is well-advised to consider that surface preparation generally takes \_\_\_ percent of the project's labor hours.
  - a. 0-20
  - b. 20-40
  - c. 40-60
  - d. 60-80
  
6. Which is **false** concerning CPM (critical path method) scheduling?
  - a. when properly used, CPM can give a "snapshot" of a project's health at any given moment
  - b. the critical tasks make up a line or path that determines the amount of time the job takes
  - c. CPM is a simple, powerful tool that is commonly used in project scheduling
  - d. critical tasks are those items that can be done at the same time

7. The water valve that is meant to be either fully open or fully closed and is used for servicing plumbing is the:
- needle valve.
  - ball valve.
  - globe valve.
  - gate valve.
8. Which is **true** concerning two-pipe fan-coil systems?
- they do not require a drainage system for the condensation removed from the air during the summer cooling cycle
  - they can produce either hot or cold water, but not both at the same time
  - they provide excellent humidity control during summer operation
  - they are the least common and most expensive fan-coil system arrangement
9. The **most** widely used evaporator in air-conditioning applications is the:
- bare tube.
  - shell and tube.
  - plate surface.
  - finned tube.
10. From the owner's standpoint, which is an advantage of a cost plus construction contract?
- no assurance of actual final cost
  - permits specification of high-cost features by the owner's staff
  - permits choice of best-qualified not lowest-bidding contractor
  - permits excessive design changes by the owner's staff
11. The effect of wind on a building structure is:
- the cause of positive pressures on all exterior surfaces.
  - a function of the surrounding terrain.
  - transferred to the foundation through the curtain walls.
  - accommodated through universal design criteria.
12. Which type of bond guarantees that the contractor will complete the work in accordance with the owner-contractor agreement?
- ancillary bond
  - performance bond
  - payment bond
  - bid bond

13. Which is **true** concerning electric heating?
- a. it has a fundamentally higher efficiency than fossil fuel systems
  - b. it can be centralized or decentralized
  - c. it has higher maintenance and insurance costs than fossil fuel systems
  - d. it has higher installation costs than fossil fuel systems
14. In a refrigeration system, the heat exchanger between the refrigerant and the exterior environment is the:
- a. compressor.
  - b. evaporator.
  - c. condenser.
  - d. chiller.
15. Which **best** describes the design-build approach to construction project delivery?
- a. the owner hires an architectural firm that serves as the owner's agent
  - b. the owner contracts with a single firm that employs an architect
  - c. the owner contracts separately with a designer and a contractor
  - d. the owner divides a project into two or more parts and separately contracts each part
16. As measured by an ordinary thermometer, temperature is a measure of:
- a. sensible heat.
  - b. Btu.
  - c. quantity of heat.
  - d. latent heat.
17. A traditional multiple-coat painting system includes a(n):
- a. roughcoat, primer, and finish coat.
  - b. sealer, finish coat, and glazecoat.
  - c. primer, undercoat, and finish coat.
  - d. undercoat, finish coat, and sealer.
18. Which is the best description of flashing?
- a. penetrations through a parapet wall and tied into the drainage system
  - b. a semi-solid mixture of asphalt or coal-tar pitch used on roofing
  - c. connecting devices that seal roofing membrane joints where the membrane ends
  - d. a force, commonly measured in pounds, that a building roof must sustain

19. Typical problems with the exterior building envelope are failure or deterioration of all of the following **except**:
- weepholes.
  - glazing compound.
  - mortar joints.
  - backer rods.
20. The direct-expansion refrigerant HVAC system commonly used in newer one- to three-story office buildings is the:
- water-cooled cabinet unit.
  - rooftop unit.
  - through-the-wall unit.
  - fan-coil unit.
21. The terminal unit that can use either constant temperature or variable temperature supply air is the:
- single-duct unit.
  - variable-air-volume unit.
  - dual-duct unit.
  - induction unit.
22. To increase the R-value of a wall, you:
- must add material of greater R-value than the wall and its elements.
  - must add material of lesser R-value than the wall and its elements.
  - must add material of the same R-value as the wall and its elements.
  - can add material of any R-value to the wall.
23. Which is **true** concerning cabling in HVAC control systems?
- coaxial cable and a twisted pair of wires are not subject to electrical interference, such as lightning
  - connections of fiber-optic cable to copper are inexpensive
  - fiber-optic telephone lines can transport data long distances and are inexpensive to use, and are not subject to the same failures as normal twisted-pair telephone lines
  - coaxial cable and a twisted pair of wires are relatively inexpensive and easy to install
24. The thin space left at the top of a brick wall segment to allow for expansion should be:
- filled in six months after installation.
  - left open to allow for moisture transfer.
  - a quarter inch for every six rows of brick.
  - caulked with a flexible silicon sealant.

25. The **most** popular installation method for commercial carpet is:
- stretch-in using tackless strip and padding.
  - single glue-down.
  - double glue-down.
  - stretch-in using tackless strip.
26. As part of an economic feasibility study, which evaluation approach analyzes all current and future financial implications of a capital project?
- life cycle costing
  - systems approach
  - cost-benefit analysis
  - pay-back evaluation
27. The weighted average of the temperature of all the surfaces in a room, within a direct line of sight of your body, is called:
- evaporative heat loss.
  - radiant heat loss.
  - mean radiant temperature.
  - convective heat loss.
28. All of the following are building location factors related to roof design and selection criteria **except**:
- climate conditions.
  - ease of roof access and potential for vandalism.
  - the presence of birds, vermin, and other potential pests.
  - the presence of rooftop equipment.
29. Mr. Smith is the owner of a new shoe repair store being built in a local strip mall. Which of the following is the **most** important of his contributions to the construction project?
- acquiring the land
  - supplying the project concept and requirements
  - obtaining municipal approvals
  - obtaining sufficient funding
30. All of the following are common materials for increasing the thermal resistance of a wall **except**:
- aluminum foil-backed wallboard.
  - wallboard made of thermally resistant aggregate.
  - nonconductive insulating wall studs.
  - insulating plaster finish.

31. Which is a dead load?
- utility installations
  - precipitation
  - movable partitions
  - occupants
32. For water to flow freely in a drainage system:
- the piping must be at least level.
  - each fixture must be trapped.
  - the system must be vented.
  - all bends or turns must be 90° angles.
33. Aluminum windows share all of the following problems common to metal windows **except**:
- difficult to refinish.
  - inability to anodize.
  - poor heat flow resistance.
  - corrosion.
34. (Fill in the blank) The design of HVAC systems is based on the estimated \_\_\_\_\_ heating and cooling loads within a building envelope.
- off-peak
  - maximum
  - minimum
  - average
35. Water hammer in plumbing systems is caused by:
- change in water temperature.
  - oscillations in the pressure of water.
  - the slow opening and closing of valves.
  - a lack of air in the system.
36. A device installed in any location where a temperature, pressure, or flow reading is desired is called a(n):
- thermostat.
  - valence.
  - sensor.
  - agent.



37. The heating system that uses a refrigeration cycle is the:
- total energy system.
  - heat pipe.
  - absorption system.
  - heat pump.
38. A fire damper is required in a duct system where:
- the duct splits.
  - the duct penetrates a fire-zone barrier.
  - there is a low pressure duct.
  - there are duct transitions.
39. Which is **true** concerning aspect ratio and duct systems?
- as aspect ratios increase, lower air pressures are required to deliver a given quantity of air
  - ducts with high aspect ratios have greater perimeters
  - ducts with high aspect ratios have lower construction costs for fabrication and installation
  - the net effect of ductwork with a high aspect ratio is lower energy consumption
40. The principal way to improve a building's indoor air quality is to:
- establish a no-smoking policy throughout the building.
  - reduce the amount of outside air drawn into the building.
  - educate occupants about the materials used in furniture.
  - maintain acceptable temperature and relative humidity.
41. The level of maintenance that intends to preserve the performance expected from the equipment or system is:
- breakdown maintenance.
  - troubleshooting.
  - service maintenance.
  - preventive maintenance.
42. A lower U-value indicates that a curtain wall or window assembly:
- is well insulated.
  - can handle most seismic loads.
  - is poorly designed.
  - has excellent expansion capabilities.

43. All flooring requires that there be some preparation of the:
- air quality.
  - inside temperature.
  - subfloor.
  - walls.
44. Which is **true** concerning packaged boilers?
- packaged boilers do not come with a structural base
  - packaged boilers are fully assembled in the boiler manufacturer's shop, with all connections (such as water, fuel, and flue stack) made after delivery to the building
  - a packaged boiler is standardized and pretested, but is not space efficient
  - the packaged firetube boiler is the least common type of heating boiler used in commercial buildings
45. (Fill in the blank) Another name for the metal roof edge is the \_\_\_.
- gravel stop
  - cant strip
  - counterflashing
  - coping
46. Rehabilitation, modernization, and remodeling are all types of:
- renovation.
  - energy performance contracting.
  - build-to-suit development.
  - speculative development.
47. In high-rise buildings with curtain wall construction, a design element required by code is:
- fire-resistant material in the building frame.
  - resistance to wind loads.
  - provision for maximum thermal resistance.
  - prevention of moisture migration.
48. Efforts to keep equipment in good operating condition are called:
- monitoring.
  - troubleshooting.
  - maintenance.
  - inspection.

49. The HVAC component requiring the **most** maintenance due to wear, dirt, and vibration and at least semiannual inspection for lost accuracy and failure is the:
- a. automatic temperature control.
  - b. air-handling unit.
  - c. pressure gauge.
  - d. refrigeration compressor.
50. The comfort zone relates to all of the following **except**:
- a. solar gain.
  - b. air cleanliness.
  - c. humidity.
  - d. temperature.



# Practice Exam Answers

- |     |   |     |   |
|-----|---|-----|---|
| 1.  | D | 26. | A |
| 2.  | A | 27. | C |
| 3.  | C | 28. | D |
| 4.  | D | 29. | D |
| 5.  | B | 30. | C |
| 6.  | D | 31. | A |
| 7.  | D | 32. | C |
| 8.  | B | 33. | B |
| 9.  | D | 34. | B |
| 10. | C | 35. | B |
| 11. | B | 36. | C |
| 12. | B | 37. | D |
| 13. | B | 38. | B |
| 14. | C | 39. | B |
| 15. | B | 40. | D |
| 16. | A | 41. | D |
| 17. | C | 42. | A |
| 18. | C | 43. | C |
| 19. | D | 44. | B |
| 20. | B | 45. | A |
| 21. | A | 46. | A |
| 22. | D | 47. | A |
| 23. | D | 48. | C |
| 24. | D | 49. | A |
| 25. | B | 50. | A |