

## 16 HOISTING AND CONVEYING EQUIPMENT

### ANSWERS—QUIZ 1

1. b
2. a
3. b
4. a
5. a
6. d
7. c
8. b
9. c
10. By having distinctly different contours on the control cord handles, the operator will know which is the hoisting handle and which is the lowering handle, even without looking.
11. Spur-gear, differential, and screw-gear are the three general types of chain hoists.
12. A hoist limit switch is an operational safety device that prevents unintended overtravel of the load block.
13. A jib crane is a crane capable of lifting, lowering, and rotating a load within a circular arc covered by a rotating arm or a jib.
14. Guy derricks are used largely for erecting structural steel in tall buildings, especially those over 10 stories high.
15. Boom length, boom angle, and capacity are the items a capacity chart should indicate for the operator.
16. Common types of conveyors include the following: belt, slat, apron, chain, screw, bucket, pneumatic, aerial, portable, gravity, live roll, en masse, flight, mobile, and vertical.
17. A screw conveyor that is not covered presents the hazard of entrapment. Feet, hands, or other parts of the body may get caught between the rotating screw and the stationary trough. These incidents can result in serious injury or death.
18. Spiral chutes present a serious fire hazard because they form flues from lower floors to upper floor through which fire can quickly spread.
19. Whenever the operator leaves the crane, the following procedure should be followed:
  - Raise all hooks to an intermediate position.
  - Spot the crane at an approved designated location.
  - Place all controls in the OFF position.

- Make a visual check before leaving the crane.

### ANSWERS—QUIZ 2

1. a
2. b
3. a
4. a
5. d
6. d
7. a, c
8. The crane cab's control and protective equipment should be arranged so that all operating handles are within convenient reach of the operator. The operator should be able to reach the handles, whether facing the area to be served by the load hook or facing the direction in which the cab is traveling. The arrangement should allow the operator a full view of the load hook in all positions.
9. The crane director (signaler) transmits code signals that govern crane movement to the crane operator.
10. Training for a crane operator requires two parts: (1) an information exchange in which rules, regulations, requirements, limits, and do's and don'ts are discussed and explained; and (2) onsite, practical training in which safe operation is explained, demonstrated by the instructor, and tried by the trainee.
11. Jumpy and jerky operation, flying starts, quick reversals, and sudden stops are the "trademarks" of a careless crane operator.
12. A boom must never be swung too rapidly. If it is, the suspended load will be swung outward by centrifugal effect. This action could cause the crane to rock or even tip. If this occurs, the load may swing and strike a person or object.
13. Severe injuries from conveyor incidents arise from the following:
  - attempting repairs or maintenance on moving conveyors
  - attempting to cross moving belts where no cross-over exists
  - attempting to ride a moving belt
14. Qualified operators of hoisting equipment should meet the following minimum requirements:
  - Age—the legal age for crane operations as determined by the local governing agency, generally

- 18 years of age.
- Language-understand spoken and written English, as well as any other language generally used at the location.
  - Physical-pass physical examinations, including vision test for depth perception.
  - Knowledge-have basic knowledge and understand of equipment-operating characteristics, capabilities, and limitations including: equipment-rate capacity, the effect of variables on that capacity, safety features, required operating procedures, and requirements established by local, state, and federal agencies.
  - Skill-demonstrate skill in manipulating and controlling equipment through all phases of operation.

### **ANSWERS—CASE STUDY**

1. Some of the most frequent causes of incidents with aerial baskets are not observing proper precautions against electrical hazards, overreaching the basket, not using personal protective equipment, and swinging the boom or basket against overhead obstructions.
2. Riding in the basket while a truck is traveling is not permitted; however, employees may ride in the basket at the work location for short moves if the basket is returned to the cradled position for each move.
3. Aerial baskets should be equipped with (1) safety belts and lanyards to be worn by all persons working from the baskets, and (2) a means for attaching the lanyard to the equipment. In general, it is more satisfactory to anchor the lanyard to the boom. However, if this will interfere with the controls or if other considerations are involved, then the lanyard can be anchored to the basket.