

Lesson 7

19. A final survey is also known as:

- ☐ a. a baseline survey.
- ☐ b. the last hoorah.
- ☐ c. an as-built survey.
- ☐ d. a control survey.

20. The final survey must take into account:

- ☐ a. building corners installed a few feet from original design location.
- ☐ b. roadway horizontal curves larger than design.
- ☐ c. constructed variations from the original design.
- ☐ d. All the above

Lesson 7

16. The final units of measure reported from a quantity survey of an earthwork project would more than likely be:
- ☐ a. degrees, minutes, and seconds.
 - ☐ b. feet.
 - ☐ c. square feet.
 - ☐ d. cubic feet or cubic yards.
17. Quantity surveying is accomplished by breaking up large complex areas into:
- ☐ a. squares.
 - ☐ b. circles.
 - ☐ c. simple geometric shapes.
 - ☐ d. triangles.
18. For earthwork volume calculations, the variation in elevation measured in feet is usually accomplished:
- ☐ a. by numerous differential leveling measurements.
 - ☐ b. using a tape measure.
 - ☐ c. by rounding to the nearest foot.
 - ☐ d. by guessing.

13. To maintain vertical control during multistory building construction, measurements are taken using differential leveling or steel taping from the:
- _____ a. roof line.
 - _____ b. top of the concrete foundation.
 - _____ c. batter board.
 - _____ d. rotating laser centerline.
14. For vertical alignment of walls, a transit or total station from a wall line offset can be used, as well as a(n):
- _____ a. automatic level and rod.
 - _____ b. steel tape.
 - _____ c. horizontal curve computation.
 - _____ d. plumb bob offset over the top of an outside wall line or corner point.
15. Projects requiring quantity surveying are usually being paid for:
- _____ a. by lump sum after project completion.
 - _____ b. by unit price measured in dollars per unit of measure.
 - _____ c. with cash.
 - _____ d. with extremely expensive survey equipment.

Lesson 7

10. A batter board is used to:
- ☐ a. hit trespassers with.
 - ☐ b. control unruly workers.
 - ☐ c. install line of site offsets along a building outside wall line.
 - ☐ d. hold up instrument tripods.
11. For a rectangular building measuring 26 feet long and 16 feet wide, the diagonals from opposite corners should measure:
- ☐ a. 26 feet and 16 feet respectively.
 - ☐ b. 30 feet, six and $\frac{3}{8}$ inches each.
 - ☐ c. 42 feet each.
 - ☐ d. 2 inches different from each other.
12. A rotating laser is used:
- ☐ a. as an audible site security alarm.
 - ☐ b. to establish a constant elevation or grade plane in its radius of influence.
 - ☐ c. to install building outside wall line offsets.
 - ☐ d. to keep insects away from the construction workers.

Lesson 7

7. Bridge construction elevation control is first established with level and rod methods:
- _____ a. along the bridge span beams.
 - _____ b. at the foundation of the bridge.
 - _____ c. along the adjoining highway centerline.
 - _____ d. at the crown of the pavement over the bridge.
8. How many building corners must be established using coordinate layout prior to setting a transit or total station over one of the corner points?
- _____ a. 1
 - _____ b. 2
 - _____ c. 3
 - _____ d. 4
9. Construction surveying for building layout is most crucial for which component of construction?
- _____ a. The roof
 - _____ b. The walls
 - _____ c. The doors
 - _____ d. The foundation

Lesson 7

4. Construction surveying layout for culverts is most like _____ layout.
- _____ a. building
 - _____ b. highway
 - _____ c. gravity pipe line
 - _____ d. bridge
5. Bridge construction surveying is usually conducted:
- _____ a. using pacing to layout distances.
 - _____ b. using a high degree of accuracy.
 - _____ c. in the winter months when the water is frozen.
 - _____ d. without regard to the connecting highway.
6. Typically, bridge construction layout is initiated with:
- _____ a. complex offset distance calculations.
 - _____ b. offset stakes from bridge centerline.
 - _____ c. strings or wire from each end of the adjoining highway.
 - _____ d. coordinate layout of foundation corners or centers.

■ Achievement Exam

Select the single best answer for each question or statement, then go online to www.myashworth.com and enter your answers.

1. For a building with a foundation bottom 10 feet deeper than the finished surrounding grade, the original batter boards should be placed at least how many feet from the corners of the building?

____ a. 10 feet

____ b. 3 feet

____ c. 5 feet

____ d. At the building corners

2. The most important features of a construction project to verify for the final as-built survey prior to completion of the construction project are:

____ a. roof top pitches.

____ b. lab cabinetry color.

____ c. buried pipeline locations.

____ d. manhole covers.

3. Culvert location offset stakes are typically installed:

____ a. adjacent to the inlet and outlet of the culvert pipe.

____ b. adjacent to the culvert center point.

____ c. within the excavation limits of the culvert.

____ d. in line with the run of the culvert.

Lesson 6

18. What should the invert elevation of a sewer pipeline be at station 3+40 if the invert out elevation of manhole at station 2+50 is 343.35, the invert in elevation of manhole at station 4+50 is 340.76, and there are no obstructions between the manholes?
- ☐ a. 342.05
 - ☐ b. 343.34
 - ☐ c. 342.18
 - ☐ d. 340.77
19. Laser alignment control of line and grade for pipeline installation is used when:
- ☐ a. no obstructions are present in the pipeline excavation.
 - ☐ b. the pipeline is to be installed on a continuous grade.
 - ☐ c. there is significant distance of pipeline with no valves or fittings obstructing laser view.
 - ☐ d. All of the above
20. Tunnel construction is necessary when conventional open cut trenching cannot be feasibly utilized due to:
- ☐ a. existing utilities that cannot be disturbed.
 - ☐ b. large volumes of traffic on a main roadway.
 - ☐ c. extreme depth of cut due to existing terrain.
 - ☐ d. All of the above

Lesson 6

15. At what top elevation would a concrete form be set for the lower side of a 6 foot wide sidewalk with proposed upper edge elevation of 665.45?
- ____ a. 663.95
 - ____ b. 666.95
 - ____ c. 665.47
 - ____ d. 665.33
16. What would the excavation cut depth be for a sewer line installation at a station interval with top of ground elevation at 765.08 and top of pipe elevation of 753.23 if the sewer pipe is 20 inch diameter RCP with a wall thickness of 3 inches, and a required commercial stone pipe bedding thickness of 4 inches?
- ____ a. 14.35 feet
 - ____ b. 15.11 feet
 - ____ c. 12.87 feet
 - ____ d. 13.54 feet
17. What is the percent grade of a storm sewer pipeline that has a change in elevation of 1.4 feet over 160 linear feet of pipeline?
- ____ a. 1.40%
 - ____ b. 0.88%
 - ____ c. 0.014%
 - ____ d. 1.39%

Lesson 6

13. For a grade stake set adjacent to centerline station 4+50, marked cut 2.25 feet, a construction equipment operator would:
- ☐ a. remove 2 feet, 3 inches of earth at station 4+50 in order to get the proposed roadway to subgrade elevation.
 - ☐ b. add 2 feet, 3 inches of earth at station 4+50 in order to get the proposed roadway to subgrade elevation.
 - ☐ c. remove 2 feet, plus or minus a quarter inch, of earth, in order to get the proposed roadway to subgrade elevation.
 - ☐ d. grade the road at 2.25% at station 4+50.
14. In order to layout a new street centerline intersecting with an existing street, a construction surveyor would:
- ☐ a. pull a string-line perpendicular to the existing street at the proposed location of the intersection, and mark the station intervals as close as possible.
 - ☐ b. paint out the new road location on the ground and begin grading operations to match the existing road.
 - ☐ c. install new centerline stations using coordinate points as provided on the design drawings, making sure to stake the beginning and end of the horizontal curve from the new road to the existing road.
 - ☐ d. orient the design drawing plan view of the proposed intersection, and use angles and distances necessary to ensure the best fit of the new road to the existing road.

Lesson 6

7. On a set of construction drawings for a municipal street, the necessary cut at a specific station interval would best be found on a _____ drawing.
- _____ a. plan view
 - _____ b. standard detail
 - _____ c. profile
 - _____ d. section cut
8. Where would an offset stake marked 3+00, 50 feet from center be located?
- _____ a. At the roadway centerline at station 3+00
 - _____ b. Adjacent to the roadway centerline at station 3+00, 50 feet from the edge of the proposed road
 - _____ c. Adjacent to the roadway centerline at station 3+00, 50 feet from the center of the proposed road
 - _____ d. 50 feet north of station 3+00
9. Roadway construction control incorporates construction surveying of:
- _____ a. cut and fill.
 - _____ b. line and grade.
 - _____ c. station intervals.
 - _____ d. invert elevations.

Lesson 3

10. The coordinates for station A are 1023.34 N and 988.56 E. What are the northing and easting coordinates for station B that is located 40 feet due east of A, and 22.32 feet due south of A.
- ☐ a. 1045.66 N and 1028.56 E
 - ☐ b. 1001.02 N and 1028.56 E
 - ☐ c. 983.34 N and 1010.88 E
 - ☐ d. 1001.02 N and 948.56 E
11. Area calculation of a closed traverse can be accomplished by dividing the interior of the traverse area into:
- ☐ a. an open traverse.
 - ☐ b. azimuth angles.
 - ☐ c. simple geometric shapes and adding the smaller areas.
 - ☐ d. x and y axis.

Lesson 3

7. The latitude of an azimuth equal to 205 degrees, 44.34 feet is _____ feet.
- _____ a. 18.74
- _____ b. 40.19
- _____ c. 20.68
- _____ d. 48.92
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8. The departure of an azimuth of 44 degrees, 121.77 feet is _____ feet.
- _____ a. 87.59
- _____ b. 117.59
- _____ c. 175.29
- _____ d. 84.59
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9. For a traverse of perimeter $P = 574.66$ feet, a summation of latitudes equal to $+0.15$, and a summation of departures of -0.09 , what is the Precision Ratio?
- _____ a. $1/3400$
- _____ b. $1/6800$
- _____ c. $1/3800$
- _____ d. $1/6400$