Welding 6th edition Bohnart Test Bank

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Instructor's Manual

to accompany

Welding

Principles and Practices

Sixth Edition

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Instructor Manual to accompany

Welding: Principles and Practices, Sixth Edition

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INTRODUCTION

This Instructor's Manual is to be used for both *Welding: Principles and Practices,* 6th Edition and the *Student Workbook for use with Welding: Principles and Practices,* 6th Edition.

This manual contains the answers to the REVIEW QUESTIONS in the textbook. Where applicable, it also provides suggested answers for the INTERNET ACTIVITIES. Since students' responses to the INTERNET ACTIVITIES will vary, the manual does not provide answers to all of the INTERNET ACTIVITIES. For those, it is suggested that the instructor review each student's answers. The instructor can then determine whether the student has responded correctly.

For those instructors who are using the Student Workbook, this manual includes the answers to that supplement.

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PART A

Answers to

Welding: Principles and Practices, 6th edition

- Review Answers
- Internet Activities—Suggested Answers

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CHAPTER 1

A. Review Answers

1. c
2. a
3. c
4. c
5. a
6. d
7. d
8. b
9. a
10. b
11. c
12. d
13. a
14. a
15. d
16. a
17. b
18. d
19. d
20. d
21. c
22. a
23. No. Welding began more than 3000 years ago when hot or cold metals were hammered to obtain a forge weld.
24. Four metals which were used by early metal workers may include copper, bronze, silver, gold, and iron. Copper was the first to be worked.
25. The Chinese developed the ability to make steel from wrought iron in 589 A.D.
26. The first patent for electric arc welding was first issued in the United States.
27. The invention of the coated electrodes gave electric arc welding its greatest boost.

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28. Answers may vary but should include such process as: GTAW OR TIG, GMAW OR MIG, SMAW, Submerged arc welding, Plasma arc welding, welding of plastics, etc.
29. No. MIG or GMAW has increased very rapidly; it is now used in many industries.
30. Answers may vary but should include such jobs as: welding operator, welder fitter, combination welder, welding supervisor, welding foreman, equipment sales, welding instructor, robotics welding operator, welding engineer, certified welding inspector.
31. Answers may vary but should include such jobs as: welding engineer, technical editor, welding professor.
32. MIG or GMAW process contributed most to aluminum welding.

B. Internet Activities

A. Answers may vary. Sample answers: Welding in Space and Related Technologies, Structural Stability of Deposits and Welded Joints in Power Engineering, Metallurgy of Arc Welding, Arc Slag Remelting of Steel and Alloys.

B. Answers may vary. Sample answer: Safety issues from the AWS Web site (www.aws.org)—noise, tripping and falling, fumes and gases, burn protection.

CHAPTER 2

A. Review Answers

1. b
2. d
3. d
4. d
5. a
6. d
7. a
8. b
9. b
10. d
11. d
12. d
13. b

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14. c
15. c
16. c
17. d
18. c
19. a
20. d
21. The advantages of welding as a means of fabrication are: Greater design flexibility and lower design cost, an elimination of patterns, lower cost of material, fewer man-hours of production, absorption of fixed purchasing charges, and minimized inventory and obsolescence charges.
22. The advantages of welding as a means for maintenance and repair: The addition of new metal to a worn part, repair and replacement of broken parts, special needs for production requirements.
23. Some of the advantage steel has in construction is in the design of fabricated equipment. These designs can reduce the weight of a machine, such as an earthmover, by 15 to 20 percent. It also makes the fabricated part stronger with rigidity.
24. Whether the pipelines are for pressure or overland, welded pipe systems have permanently tight connections of greater strength and rigidity. Other advantages of welding fabrication of pipe include a more pleasing appearance, efficient and economical.
25. The advantages of welded construction when applied to pressure vessels are: construction and maintenance cost are reduced, less material is used in the construction of welded vessels, thick plated pressure vessels, 3 to 5 inches in thickness must be welded.
26. The advantages in the application of welding to buildings are: materials are standard, readily available and accurate; large parts can be fabricated in the shop under controlled conditions; site erection is fast resulting in lower cost; construction material weigh less and are stronger; prefabricated modules provide flexibility of design and floor plan arrangements.
27. Bridges can have all-welded construction.
28. Due to the welding process, a more rigid frame construction, which include piling sections and reinforcing steel make a structure more resistant to earthquakes, floods, and high winds.
29. No. Pressures of over 1,000 psi and temperatures ranging from −200 to +1,2000 degrees F. are not uncommon in high pressure welded pipelines.
30. Some of the watercraft fabricated by welding includes aircraft carriers, destroyers, cruisers, and atomic-powered submarines.
31. The welding process is now constructing bridges wholly or in part. Savings in typical steel bridges, resulting from welded construction, range up to 20 percent. A welded butt joint is the best type of joint, with greater strength and a more uniform stress distribution in comparison to riveting.

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32. Ten of the products manufactured wholly or in part by welding by the military are: pulley brackets, structural fittings, axles, struts, brackets, armor plate assemblies, gun mounts, gas and liquid tanks, engine cowling and wheel boots.
33. Welding is the principal method of joining materials used by the railroad industry. It is used as a maintenance tool, building streamlined diesel and electric locomotives, passenger cars, refrigerator cars, and new track which is continuously welded.
34. The three weaknesses are: service failure, a rivet joint develops a strength equal to only 80 percent of the plate and time consuming due to punching holes in the plate.
35. A tank which is over 3 inches cannot be riveted but can be welded.

B. Internet Activities

A. Answers may vary, see student's work.

B. Answers may vary, see student's work.

CHAPTER 3

A. Review Answers

1. d
2. a
3. c
4. b
5. d
6. d
7. c
8. c
9. c
10. d
11. d
12. a
13. c
14. a
15. c
16. c

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17. a
18. c
19. b
20. d
21. b
22. d
23. c
24. d
25. d
26. d
27. d
28. c
29. a. new uses for iron

    b. discovery of large iron ore deposits in northern Michigan

    c. development of the Bessemer and open hearth processes

    d. the Civil War and America's explosive industrial growth following the war

    e. expansion of the railroads

    f. World Wars I and II
30. 1. Mold bottom is plugged

    2. Liquid steel is poured into the mold

    3. Once a solid shell is formed in the mold the straightener withdrawal units starts

    4. The strand enters the roller containment section after exiting the mold where it is further cooled in the secondary cooling zone

    5. The strand continues in the straightener and is cut to the specified length
31. Cementation process, crucible process, electric furnace process, oxygen process
32. Warping can be counteracted by setting up plates before welding so that they bow in the opposite direction.
33. Low, 0.05–0.015; Mild, 0.16–0.29; Medium, 0.30–0.59; High, 0.60–0.99; Ultra high, 1.0–2.0
34. 1. aerospace

    2. chemical processing

    3. pulp and paper equipment

    4. power generation

    5. oil and gas exploration and processing

    6. pollution control equipment

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