

Final Exam
Continuing Education Course #127
Fundamentals of Steel
Part A

1. Steel is found naturally in nature.
☐ a. True
☐ b. False
2. Steel is basically unchanged from when it was first made in the U. S. until now.
☐ a. True
☐ b. False
3. Steel was first made in the United States in.
☐ a. 1676
☐ b. 1856
☐ c. 1908
☐ d. 1921
4. The “code” for steel design and construction in the United States is recognized to mean the Manual of Steel Construction.
☐ a. True
☐ b. False
5. The best known and most widely used publication of the AISC is.
☐ a. Code of Standard Practice for Steel Buildings and Bridges
☐ b. Manual of Steel Construction
☐ c. Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings
☐ d. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use
6. The Manual of Steel Construction includes all structural shapes available.
☐ a. True
☐ b. False
7. The publications of the American Institute of Steel Construction include information generated and obtained from.
☐ a. individuals practicing engineering
☐ b. those in engineering education
☐ c. companies engaged in fabrication and erection of structural steel
☐ d. all of the above
8. The primary goal of steel manufacturing is to reduce the amount of carbon present in iron ore.
☐ a. True
☐ b. False

NOTE: The following question was revised on 13 August 2018

9. Heat is required in the steel making process.

- ☐ a. True
- ☐ b. False

10. Steel is 100% recyclable.

- ☐ a. True
- ☐ b. False

Use the following diagram for Questions 11, 12, and 13.

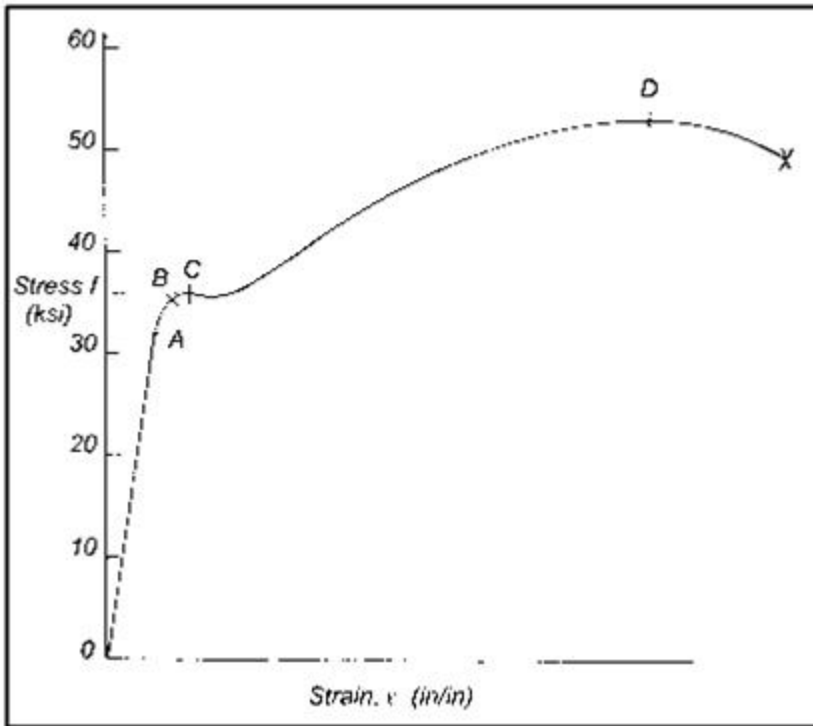


Figure 1 - Typical stress - strain diagram for structural carbon steel

11. Point “C” on the diagram is.

- ☐ a. Tensile strength
- ☐ b. Elastic limit
- ☐ c. Stress at failure
- ☐ d. Yield point
- ☐ e. Proportional limit

12. Point “A” on the diagram is.

- ☐ a. Tensile strength
- ☐ b. Elastic limit
- ☐ c. Stress at failure
- ☐ d. Yield point
- ☐ e. Proportional limit

13. Point “D” on the diagram is.

- ☐ a. Tensile strength
- ☐ b. Elastic limit
- ☐ c. 0.2% strain

- ☐ d. Yield point
- ☐ e. Proportional limit

NOTE: The following question was revised on 13 August 2018

14. Steel stressed beyond the elastic limit will be permanently deformed.

- ☐ a. True
- ☐ b. False

NOTE: The following question was revised on 13 August 2018

15. A bar of steel is 2.750" wide by 12.000" long. If the bar is stretched to 12.108", how wide will the bar be? (Poisson's ratio = $\mu = 0.29$)

- ☐ a. 2.741"
- ☐ b. 2.743"
- ☐ c. 2.747"
- ☐ d. 2.757"

16. A test piece of steel has gage marks 2.000" apart. After failure in tension, the gage marks are 2.160" apart. What is the percentage of elongation?

- ☐ a. 0.08%
- ☐ b. 1.08%
- ☐ c. 2.08%
- ☐ d. 8.00%
- ☐ e. 8.08%

17. The mechanical properties of steel are affected by.

- ☐ a. Chemical composition
- ☐ b. Strain history
- ☐ c. Heat treatment
- ☐ d. All of the above

NOTE: The following question was revised on 04 Dec 2018

18. Work hardening takes place during.

- ☐ a. Cold rolling
- ☐ b. Hot rolling
- ☐ c. Drilling for bolt holes
- ☐ d. None of the above

19. ASTM A36 steel has a yield point of 36,000 psi.

- ☐ a. True
- ☐ b. False

20. If a steel shape is listed in the AISC Manual of Steel Construction, all steel mills will produce it.

- ☐ a. True
- ☐ b. False

21. All hot rolled shapes are published in the.

- ☐ a. Code of Standard Practice for Steel Buildings and Bridges
- ☐ b. Manual of Steel Construction
- ☐ c. Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings

☐ d. Standard Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use

22. A W12 beam can be over 15 inches deep.

- ☐ a. True
☐ b. False

23. For an S shape beam, the inside surface of the flange is parallel with the outside surface of the flange.

- ☐ a. True
☐ b. False

24. When an American Standard Channel of the same nominal dimension gets larger, material is added to make the web longer.

- ☐ a. True
☐ b. False

25. It is so common to attach equal leg angles back to back, that the AISC Manual lists properties for that configuration.

- ☐ a. True
☐ b. False

NOTE: The following question was revised on 13 August 2018

26. All structural tees are made by cutting the W, M, and S beams in half.

- ☐ a. True
☐ b. False

27. A 6" double-extra strong steel pipe has the same outside diameter as a 6" standard weight steel pipe.

- ☐ a. True
☐ b. False

28. Structural carbon steel weighs.

- ☐ a. 50 pcf
☐ b. 150 pounds per cubic foot
☐ c. 490 #/ft³
☐ d. None of the above

29. Built-up shapes are made by attaching two or more rolled shapes together.

- ☐ a. True
☐ b. False