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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.

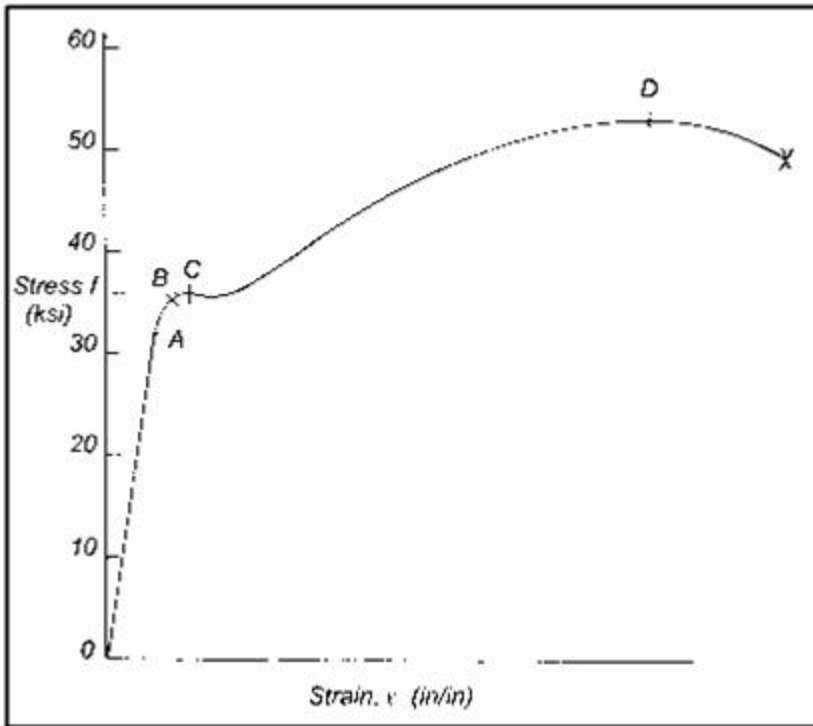


Figure 1 - Typical stress - strain diagram for structural carbon steel

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

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