### Chapter 24 SURFACE PROCESSING OPERATIONS

### Multiple Choice Quiz

There are 25 correct answers in this multiple choice quiz (some questions have multiple answers that are correct). To achieve a perfect score on the quiz, all correct answers must be given. Each correct answer is worth 1 point. Each omitted answer or wrong answer reduces the score by 1 point. Percentage score on the quiz is based on the total number of correct answers.

1. Which of the following are reasons why workparts must be cleaned in industry (four best answers): (a) to avoid air pollution, (b) to avoid water pollution, (c) to enhance appearance, (d) to enhance mechanical properties of the surface, (e) to improve hygiene conditions for workers, (f) to improve surface finish, (g) to prepare the surface for subsequent processing, and (h) to remove contaminants that might chemically attack the surface?
2. Which of the following chemicals are associated with alkaline cleaning (two correct answers): (a) borax, (b) hydrochloric acid, (c) propane, (d) sodium hydroxide, (e) sulfuric acid, and (f) trichlorethylene?
3. Ultrasonic cleaning combines chemical cleaning and mechanical agitation of the cleaning fluid to remove surface contaminants: (a) true or (b) false?
4. In sand blasting, which one of the following blast media is used: (a) Al2O3, (b) crushed nut shells, (c) nylon beads, (d) SiC, or (e) SiO2?
5. Shot peening uses a high-velocity stream of which one of the following media: (a) Al2O3 grits, (b) sand, (c) SiC grits, or (d) steel pellets?
6. Tumbling is a mass finishing method that uses a rotating barrel that contains a mixture of parts and media: (a) true of (b) false?
7. Which of the following processes generally produces a deeper penetration of atoms in the impregnated surface: (a) diffusion or (b) ion implantation?
8. Calorizing is the same as which one of the following surface processes: (a) aluminizing, (b) doping, (c) hot sand blasting, or (d) siliconizing?
9. Which one of the following plating metals produces the hardest surface on a metallic substrate: (a) cadmium, (b) chromium, (c) copper, (d) nickel, or (e) tin?
10. Electroforming is basically the same process as electroplating, but it is used to create a part formed around a pattern, and the plate thickness is much greater than in electroplating: (a) true or (b) false?
11. Which one of the following plating metals is associated with the term galvanizing: (a) iron, (b) lead, (c) steel, (d) tin, or (e) zinc?
12. Which of the following processes involves electrochemical reactions (two correct answers): (a) anodizing, (b) chromate coatings, (c) electroless plating, (d) electroplating, and (e) phosphate coatings?
13. With which one of the following metals is anodizing most commonly associated (one answer): (a) aluminum, (b) magnesium, (c) steel, (d) titanium, or (e) zinc?
14. Sputtering is a form of which one of the following: (a) chemical vapor deposition, (b) defect in arc welding, (c) diffusion, (d) ion implantation, or (e) physical vapor deposition?
15. Which one of the following gases is the most commonly used in sputtering and ion plating: (a) argon, (b) chlorine, (c) neon, (d) nitrogen, or (e) oxygen?
16. Chemical vapor deposition can be defined as the interaction between a mixture of gases and the surface of a heated substrate, causing chemical decomposition of some of the gas constituents and formation of a solid film on the substrate: (a) true or (b) false?
17. The principal methods of applying powder coatings are which of the following (two best answers): (a) brushing, (b) electrostatic spraying, (c) fluidized bed, (d) immersion, and (e) roller coating?
18. Porcelain enamel is applied to a surface in which one of the following forms: (a) liquid emulsion, (b) liquid solution, (c) molten liquid, or (d) powders?
19. Hard facing utilizes which one of the following basic processes: (a) arc welding, (b) brazing, (c) dip coating, (d) electroplating, or (e) mechanical deformation to work harden the surface?