

19 Multiple choice questions



A+
100%

1. a hard brittle iron carbide compound with formula Fe_3C , found in carbon
 - a. ferrite
 - b. cementite
 - c. austenite
 - d. **CORRECT: cementite**

2. applies to any one of several processes involving heating metals to controlled temperatures for specific period of time, and afterwards cooling them at controlled rates; these may be applied to soften work-hardened material but more generally they are used to strengthen alloys
 - a. current
 - b. annealing
 - c. austenite
 - d. **CORRECT: heat treatment**

3. discontinuities in the crystal lattice of a metal; the movement of these under stress may be used to explain slip, creep, etc.
 - a. ductility
 - b. cast iron
 - c. **CORRECT: dislocations**
 - d. annealing

4. a system of forces that exerts a resultant moment but no resultant force
 - a. current
 - b. **CORRECT: couple**
 - c. bronze
 - d. magnet

5. involves changing the shape or size of metal by plastic deformation; carried out below the recrystallisation point, usually at room temperature; hardness and tensile strength are increased while ductility and impact values are lowered
- cast iron
 - CORRECT: cold working**
 - case hardening
 - annealing
6. an alloy of copper and up to 10% tin, known as tin bronze; alloys of copper and up to 10% aluminium are known as aluminium bronzes, while alloys of copper and up to 5% silicon are known as silicon bronzes
- brass
 - ferrite
 - couple
 - CORRECT: bronze**
7. a face centred cubic (FCC) phase in the iron-carbon equilibrium diagram, designated by the symbol gamma (γ), this is a non-magnetic solid solution of carbon in iron
- ductility
 - CORRECT: austenite**
 - cementite
 - current
8. the purpose of this process may be to remove stresses, soften, obtain a desired structure or improve machinability and cold working properties; it involves heating steel to and holding at a suitable temperature, followed by a relatively slow cooling
- ferrite
 - ductility
 - cementite
 - CORRECT: annealing**
9. those metals in which primary constituent is iron (Fe)
- brass
 - CORRECT: ferrous**
 - current
 - ferrite

10. an alloy of iron and carbon in which carbon is an excess of the amount that can be retained in solid solution in austenite at the eutectic temperature; carbon is usually present in the range of approximately 2% to 4.5%; in addition, silicon, manganese, sulphur and phosphorus are contained in varying amounts
- brass
 - current
 - austenite
 - CORRECT: cast iron**
11. a metal and element, this substance is lightweight, corrosion resistant, ductile, malleable, machinable and has excellent castability
- austenite
 - ductility
 - cementite
 - CORRECT: aluminium**
12. it gets its name from the way that the direction of electron flow changes or alternates; in this process the positive and negative charges at either end of the conductor switch positions which results in reversals of electron direction.
- heat treatment
 - current
 - annealing
 - CORRECT: alternating current**
13. body centred cubic (BCC) phase in the iron-carbon phase diagram; may exist in either a low temperature alpha or a high temperature delta form
- bronze
 - CORRECT: ferrite**
 - ferrous
 - cementite
14. provides a constant flow of electrons in a single direction from negative to positive
- current
 - case hardening
 - CORRECT: direct current (DC)**
 - heat treatment

15. a piece of iron or other material exhibiting the properties of magnetism, i.e. it generates a force or magnetic field that attracts other ferromagnetic materials such as iron and attracts or repels other magnets
- current
 - CORRECT: magnet**
 - couple
 - bronze
16. the rate of electrically charged particles measured in amperes
- ferrous
 - ferrite
 - CORRECT: current**
 - magnet
17. the ease with which a material deforms plastically while undergoing tensile forces
- ferrite
 - aluminium
 - austenite
 - CORRECT: ductility**
18. an alloy of copper and up to 43% zinc
- ferrous
 - CORRECT: brass**
 - bronze
 - magnet
19. a process of surface hardening involving a change in the composition of the outer layer of a ferrous alloy; typical hardening processes are carburising, cyaniding, carbonating and nitriding
- CORRECT: case hardening**
 - cold working
 - annealing
 - cast iron