Engineering Materials

1. The property of a material by which it can be drawn into wires is:

(A) Malleability

(B) Ductility

(C) Toughness

(D) Hardness

Answer: B) Ductility

2. Brass is an alloy of:

(A) Copper and tin

(B) Copper and zinc

(C) Zinc and tin

(D) Copper and lead

Answer: B) Copper and zinc

3. The major constituent of cast iron is:

(A) Iron

(B) Carbon

(C) Silicon

(D) Manganese

Answer: A) Iron

4. Annealing is the process of:

(A) Softening material

(B) Hardening material

(C) Clean material

(D) Alloying material

Answer: A) Softening material

5. Stainless steel is mainly an alloy of:

(A) Iron, carbon, chromium

(B) Iron, nickel, copper

(C) Iron, zinc, manganese

(D) Zinc, copper, lead

Answer: A) Iron, carbon, chromium

6. The property of resisting indentation is:

(A) Hardness

(B) Toughness

(C) Elasticity

(D) Malleability

Answer: A) Hardness

7. Purest form of iron is:

(A) Cast iron

(B) Wrought iron

(C) Pig iron

(D) Steel

Answer: B) Wrought iron

8. Bronze is an alloy of:

(A) Copper and tin

(B) Copper and zinc

(C) Iron and nickel

(D) Iron and zinc

Answer: A) Copper and tin

9. To refine grain size in steel:

(A) Add aluminum

(B) Add sulphur

(C) Add copper

(D) Add nickel

Answer: A) Add aluminum

10. The hardest material known is:

(A) Iron

(B) Tungsten

(C) Diamond

(D) Silicon carbide

Answer: C) Diamond

11. The process used to improve surface hardening of steel is:

(A) Nitriding

(B) Annealing

(C) Tempering

(D) Normalizing

Answer: A) Nitriding

12. Material having the highest thermal conductivity is:

(A) Copper

(B) Aluminum

(C) Silver

(D) Gold

Answer: C) Silver

13. The addition of nickel to steel:

(A) Increases toughness

(B) Decreases toughness

(C) Increases brittleness

(D) Decreases ductility

Answer: A) Increases toughness

14. Fatigue failure is due to:

(A) Repeated loading

(B) Static load

(C) Sudden impact

(D) Thermal expansion

Answer: A) Repeated loading

15. “Elastic limit” is the maximum stress up to which material will:

(A) Regain its original shape

(B) Break

(C) Deform permanently

(D) Show no strain

Answer: A) Regain its original shape

16. The main raw material for glass is:

(A) Silica

(B) Gypsum

(C) Limestone

(D) Sandstone

Answer: A) Silica

17. Which is a non-ferrous metal?

(A) Copper

(B) Steel

(C) Cast iron

(D) Nickel steel

Answer: A) Copper

18. Young’s modulus is maximum for:

(A) Rubber

(B) Brass

(C) Steel

(D) Aluminum

Answer: C) Steel

19. The ability of a material to absorb energy up to fracture is called:

(A) Toughness

(B) Hardness

(C) Ductility

(D) Brittleness

Answer: A) Toughness

20. Season cracking is associated with:

(A) Brass

(B) Copper

(C) Steel

(D) Bronze

Answer: A) Brass

21. Cementite is:

(A) Iron carbide

(B) Iron oxide

(C) Iron sulphide

(D) Iron nitride

Answer: A) Iron carbide

22. Electrical conductivity is highest in:

(A) Silver

(B) Copper

(C) Aluminum

(D) Gold

Answer: A) Silver

23. The main ingredient in Portland cement is:

(A) Limestone

(B) Gypsum

(C) Sand

(D) Clay

Answer: A) Limestone

24. The primary hardening element in steel is:

(A) Carbon

(B) Chromium

(C) Tungsten

(D) Manganese

Answer: A) Carbon

25. The process of heating and sudden cooling to make steel hard is:

(A) Quenching

(B) Normalizing

(C) Cryogenic

(D) Tempering

Answer: A) Quenching

26. Stainless steel contains at least:

(A) 10.5% chromium

(B) 20% copper

(C) 45% zinc

(D) 35% tin

Answer: A) 10.5% chromium

27. For bearings, the most suitable material is:

(A) Babbitt metal

(B) Cast iron

(C) Wrought iron

(D) Alloy steel

Answer: A) Babbitt metal

28. Durability in materials refers to:

(A) Ability to withstand wear and decay

(B) Melting point

(C) Resistance to water

(D) Electrical resistance

Answer: A) Ability to withstand wear and decay

29. The unit of hardness is:

(A) No units (comparative scale)

(B) N/m^2

(C) kg/m^3

(D) Nm

Answer: A) No units (comparative scale)

30. Which has the highest melting point?

(A) Tungsten

(B) Iron

(C) Lead

(D) Silver

Answer: A) Tungsten

31. Polymers are:

(A) Organic compounds

(B) Inorganic compounds

(C) Mixtures

(D) Alloys

Answer: A) Organic compounds

32. Addition of chromium to steel increases:

(A) Corrosion resistance

(B) Brittleness

(C) Conductivity

(D) Elasticity

Answer: A) Corrosion resistance

33. A material with high ductility:

(A) Can be drawn into wire

(B) Is very hard

(C) Fractures easily

(D) Is brittle

Answer: A) Can be drawn into wire

34. Thermal expansion is highest in:

(A) Plastics

(B) Aluminum

(C) Iron

(D) Copper

Answer: A) Plastics

35. Shot peening improves:

(A) Fatigue strength

(B) Hardness

(C) Brittleness

(D) Melting point

Answer: A) Fatigue strength

36. Isotropic materials show:

(A) Same properties in all directions

(B) Different properties in different directions

(C) Varying hardness

(D) Varying color

Answer: A) Same properties in all directions

37. The term “annealing” means:

(A) Slow cooling

(B) Rapid cooling

(C) Surface hardening

(D) Galvanizing

Answer: A) Slow cooling

38. Tensile strength is maximum for:

(A) Steel

(B) Aluminum

(C) Copper

(D) Lead

Answer: A) Steel

39. Cast iron is made by:

(A) Remelting pig iron

(B) Alloying copper

(C) Adding nickel

(D) Forging

Answer: A) Remelting pig iron

40. Most plastics are:

(A) Good insulators

(B) Good conductors

(C) Magnetic

(D) Oxidizing

Answer: A) Good insulators

41. Brass is used for:

(A) Electrical fittings

(B) Bearings

(C) Gears

(D) All of these

Answer: D) All of these

42. When steel is heated to red hot and cooled slowly, process is:

(A) Annealing

(B) Quenching

(C) Tempering

(D) Work hardening

Answer: A) Annealing

43. The element mainly used in solder is:

(A) Tin

(B) Lead

(C) Zinc

(D) Copper

Answer: A) Tin

44. Nichrome is used for:

(A) Electrical resistance wires

(B) Chemical vessels

(C) Cooking utensils

(D) Car radiators

Answer: A) Electrical resistance wires

45. Melting point of aluminum is about:

(A) 660°C

(B) 1050°C

(C) 900°C

(D) 385°C

Answer: A) 660°C

46. A polymer with highest crystallinity is:

(A) Nylon

(B) PVC

(C) Bakelite

(D) Teflon

Answer: D) Teflon

47. Main source of bitumen is:

(A) Petroleum

(B) Natural gas

(C) Coal

(D) Wood

Answer: A) Petroleum

48. Cast iron type most suitable for machinability:

(A) Grey cast iron

(B) White cast iron

(C) Malleable iron

(D) Ductile iron

Answer: A) Grey cast iron

49. Non-ferrous metals include:

(A) Lead

(B) Tin

(C) Gold

(D) All

Answer: D) All

50. Most widely used insulating material for cables is:

(A) PVC

(B) Rubber

(C) Asbestos

(D) Aluminum

Answer: A) PVC

51. Corrosion resistance of steel is increased by adding:

(A) Chromium

(B) Silicon

(C) Phosphorus

(D) Aluminum

Answer: A) Chromium

52. Carburizing is used to:

(A) Harden the surface of steel

(B) Harden the core

(C) Reduce carbon content

(D) Anneal the surface

Answer: A) Harden the surface of steel

53. Impact strength of materials is measured by:

(A) Charpy test

(B) Hardness test

(C) Compression test

(D) Creep test

Answer: A) Charpy test

54. The polymer most suitable for bottles is:

(A) PET

(B) PVC

(C) Nylon

(D) Bakelite

Answer: A) PET

55. Tool steels are generally alloys of:

(A) Iron-carbon

(B) Iron-chromium

(C) Iron-silicon

(D) Iron-aluminum

Answer: A) Iron-carbon

56. Nylon is a:

(A) Polyamide

(B) Polyester

(C) Polycarbonate

(D) Polyvinyl

Answer: A) Polyamide

57. The Rust is:

(A) Hydrated iron oxide

(B) Iron nitrate

(C) Iron sulphide

(D) Iron nitride

Answer: A) Hydrated iron oxide

58. The process of galvanizing involves:

(A) Coating with zinc

(B) Coating with copper

(C) Coating with tin

(D) Coating with lead

Answer: A) Coating with zinc

59. To improve machinability, add:

(A) Sulphur

(B) Phosphorus

(C) Carbon

(D) Nickel

Answer: A) Sulphur

60. The main advantage of wrought iron is:

(A) Toughness

(B) Brittleness

(C) High carbon

(D) Light weight

Answer: A) Toughness

61. “Thermosetting” plastics:

(A) Cannot be remolded

(B) Can be remolded

(C) Burn easily

(D) Dissolve in water

Answer: A) Cannot be remolded

62. Bakelite is used for:

(A) Switches and plugs

(B) Pipes

(C) Bearings

(D) Gears

Answer: A) Switches and plugs

63. Fatigue strength is:

(A) Resistance to repeated loading

(B) Resistance to static loading

(C) Maximum breaking load

(D) Ductility

Answer: A) Resistance to repeated loading

64. Which is a refractory material?

(A) Fire clay

(B) Cast iron

(C) Brass

(D) Aluminum

Answer: A) Fire clay

65. Main use of silicon in steel is:

(A) Deoxidizer

(B) Alloying

(C) Increase strength

(D) Increase ductility

Answer: A) Deoxidizer

66. Bituminous materials are used for:

(A) Road surfacing

(B) House paints

(C) Food storage

(D) Plumbing

Answer: A) Road surfacing

67. Mercury is used in thermometers because:

(A) Remains liquid at room temp

(B) High boiling point

(C) Shiny surface

(D) All of these

Answer: D) All of these

68. Rigid PVC is mainly used for:

(A) Pipes

(B) Tires

(C) Windows only

(D) Glass bottles

Answer: A) Pipes

69. A ceramic material is:

(A) Porcelain

(B) Lead

(C) Glycerine

(D) Silicone

Answer: A) Porcelain

70. Lead is harmful because:

(A) Poisonous

(B) Rusts easily

(C) Heavy only

(D) Cannot be recycled

Answer: A) Poisonous

71. Spheroidal graphite in cast iron imparts:

(A) Ductility

(B) Hardness

(C) Brittleness

(D) Toughness

Answer: A) Ductility

72. Effective heat insulator is:

(A) Wool

(B) Iron

(C) Copper

(D) Silver

Answer: A) Wool

73. White gold is generally:

(A) Gold + nickel

(B) Gold + copper

(C) Gold + zinc

(D) Gold + silver

Answer: A) Gold + nickel

74. Alloy with highest corrosion resistance:

(A) Stainless steel

(B) Brass

(C) Bronze

(D) Zinc

Answer: A) Stainless steel

75. The first artificial plastic was:

(A) Bakelite

(B) PVC

(C) Nylon

(D) Teflon

Answer: A) Bakelite

76. The chief property for bearing metals is:

(A) Softness

(B) Corrosion resistance

(C) Brittleness

(D) Toughness

Answer: A) Softness

77. The texture of a cast iron depends on:

(A) Cooling rate

(B) Heating method

(C) Alloy additions

(D) Melting point only

Answer: A) Cooling rate

78. Copper alloy most suitable for springs:

(A) Beryllium copper

(B) Bronze

(C) Brass

(D) Copper-zinc

Answer: A) Beryllium copper

79. Color of pure aluminum is:

(A) Silver white

(B) Yellow

(C) Red

(D) Blue

Answer: A) Silver white

80. Tinning is coating with:

(A) Tin

(B) Lead

(C) Copper

(D) Zinc

Answer: A) Tin

81. Sulphur in steel:

(A) Increases machinability

(B) Decreases strength

(C) Increases ductility

(D) Decreases toughness

Answer: A) Increases machinability

82. Tempering of steel:

(A) Reduces brittleness

(B) Increases hardness

(C) Increases ductility

(D) Increases melting point

Answer: A) Reduces brittleness

83. Toughness is maximum at:

(A) Ductile to brittle transition

(B) Elastic limit

(C) Yield strength

(D) Ultimate strength

Answer: D) Ultimate strength

84. The property measuring resistance to crack propagation:

(A) Fracture toughness

(B) Ductility

(C) Brittleness

(D) Hardness

Answer: A) Fracture toughness

85. Most common metal used in aircraft structures:

(A) Aluminum alloys

(B) Steel

(C) Copper

(D) Nickel

Answer: A) Aluminum alloys

86. “Babbit” metal is mainly used for:

(A) Bearings

(B) Springs

(C) Gears

(D) Shafts

Answer: A) Bearings

87. Rubber is a:

(A) Polymer

(B) Metal

(C) Alloy

(D) Ceramic

Answer: A) Polymer

88. Plaster of Paris is mainly:

(A) Calcium sulphate

(B) Sodium silicate

(C) Calcium carbonate

(D) Lime

Answer: A) Calcium sulphate

89. Most common plasticizer for PVC:

(A) Phthalates

(B) Naphthalene

(C) Urea

(D) Propylene

Answer: A) Phthalates

90. Duralumin is an alloy of:

(A) Aluminum, copper, manganese, magnesium

(B) Nickel, tin

(C) Nickel, steel

(D) Aluminum, iron

Answer: A) Aluminum, copper, manganese, magnesium

91. Softest engineering material:

(A) Lead

(B) Copper

(C) Iron

(D) Glass

Answer: A) Lead

92. Welding electrodes are coated with:

(A) Flux

(B) Resin

(C) Glass

(D) Paint

Answer: A) Flux

93. Portland cement sets by:

(A) Hydration

(B) Heating

(C) Drying

(D) Freezing

Answer: A) Hydration

94. Thermocouple wires are made of:

(A) Dissimilar metals

(B) Similar metals

(C) Plastic

(D) Glass

Answer: A) Dissimilar metals

95. Zirconium is used as:

(A) Nuclear reactor cladding

(B) Pigment

(C) Insulator

(D) Magnetic material

Answer: A) Nuclear reactor cladding

96. The modulus of elasticity for glass is about:

(A) 70 GPa

(B) 10 GPa

(C) 1 GPa

(D) 500 GPa

Answer: A) 70 GPa

97. Lead is used for:

(A) Cable sheathing

(B) Battery plates

(C) Solders

(D) All

Answer: D) All

98. Green sand mould is composed of:

(A) Silica sand, clay, moisture

(B) Sand and resin

(C) Ferrous powder

(D) Aluminum oxide

Answer: A) Silica sand, clay, moisture

99. Body centered cubic lattice is found in:

(A) Alpha iron

(B) Copper

(C) Nickel

(D) Lead

Answer: A) Alpha iron

100. Austenite is:

(A) Phase of steel

(B) Phase of copper

(C) Nickel alloy

(D) Titanium alloy

Answer: A) Phase of steel

***