

JNTU ONLINE EXAMINATIONS [Mid 2 -
MMS]

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1. ----- alloys have the highest specific strength of all the structural materials out of the following. :-
>titanium
2. ----- are thin strong filaments made by growing a crystal. :->whiskers
3. ----- cooling is done in an annealing process. :->furnace
4. ----- diagram is of fundamental importance in heat treatment process. :->iron-carbon equilibrium
5. ----- is the most suitable case hardening process for alloy steels containing molybdenum and chromium. :-
>nitriding
6. ----- is the most suitable case hardening process for plain carbon steel containing less than 0.2% carbon. :-
>carburizing
7. ----- steel is normally subjected to tempering. :->quenched
8. A material is able to retain the deformation permanently by virtue of its ----- :->elasticity
9. A material system consisting of a mixture of two or more macro constituents, which are mutually insoluble and forming distinct phases is known as ----- :->composite material
10. A process by which, continuous reinforcing fibers are accurately positioned in the predetermined pattern to a hollow shape is ----- :->filament winding
11. A tensile load of 100N is aluminum-boron composite of 1mm² cross-sectional area. The volume of the parallel fibers is 30%. The stress in the fibers when the load axis is parallel to the fibers is ----- MN/m² :->242
12. A tensile load of 100N is aluminum-boron composite of 1mm² cross-sectional area. The volume of the parallel fibers is 30%. The stress in the fibers when the load axis is perpendicular to the fibers is ----- MN/m² :-
>100
13. Addition of lead and bismuth to aluminium improves its ----- :->machinability
14. Addition of manganese to aluminium improves its ----- :->corrosion resistance
15. Addition of nickel to copper improves its ----- :->hardness
16. Addition of silicon to aluminium improves its ----- :->castability
17. Addition of silicon to copper improves its ----- :->hardness and strength
18. Addition of which of the following alloying elements shift the I.T. diagram to the right side? :->Mn and Mo
19. Addition of which of the following alloying elements will increase the hardenability of steel? :-> Mn and Cr
20. Addition of which of the following alloying elements will reduce the critical cooling rate of steels? :->Cr, W and
Mo
21. Addition of which of the following element lowers the eutectoid temperature in Fe -Fe₃C equilibrium diagram? :-
>Mn
22. Addition of which of the following element raises the eutectoid temperature in Fe -Fe₃C equilibrium diagram? :-
>Cr & W
23. Addition of which of the following elements increases the hardness of steels? :->Mo, V and W
24. Addition of which of the following elements will cause hot shortness of steel? :->S
25. Addition of which of the following elements will lower the A₄ temperature and raise the A₃ temperature in Fe - Fe₃C equilibrium diagram? :->Cr
26. Addition of which of the following elements will raise the A₄ temperature and lower the A₃ temperature in Fe-Fe₃C equilibrium diagram? :->Ni
27. Addition of which of the following elements will reduce the hardenability of steel? :->Co
28. Addition of zinc to copper improves its ----- :->ductility and strength
29. Admiralty gun metal contains mainly ----- :->copper (88%), tin (10%) and rest zinc
30. Age hardening of duralumin is due to ----- :->copper and magnesium
31. Aluminium as a material of construction suffers from the disadvantage of ----- :->low tensile
strength
32. An electrograph is used for the study of ----- :->phase transformation in metals and alloys
33. An increase in carbon content will: :->increase the shift of the I.T. diagram to the right

34. Austempering is used for thin steel sections to obtain products free from cracks and with good impact resistance. It is also resistance to ----- called ----- quenching. :->isothermal
35. Austempering results in the formation of ----- :->bainite
36. Bell metal is an alloy of ----- :->copper and tin
37. Brass is an alloy of ----- :->copper and zinc
38. Bronze is an alloy of copper and ----- :->tin
39. Carbide ceramics in cermets are not bonded by ----- :->copper
40. Carbon percentage in steel used for the manufacture of heavy duty leaf and coil springs is ----- :->1
41. Carbonitriding is carried out for low carbon steel (C=0.2%) at ----- °C :->845
42. Carburiser used in gas carburizing is ----- :->natural gas
43. Carburiser used in pack carburizing method is ----- :->coke/charcoal
44. Carrier gas used in carbonitriding process is a mixture of ----- :->N₂, H₂ and CO
45. Ceramic recuperators are generally made of ----- :->silicon carbide
46. Cemented carbide tipped tools maintain high hardness up to ----- °C :->1200
47. Ceramic material fabrication cannot be done by ----- :->welding
48. Ceramic materials: :->are exemplified by clay and mica, are poor electrical conductors due to lack of free **electrons and never exhibit polymorphism**
49. Ceramics have :->excellent high temperature strength and hardness
50. Cermets are used for making----- :->cutting tools and abrasives
51. Chromium oxide abrasives are used for polishing of ----- :->ferrous metals
52. Combination of metals and ceramics are called ----- :->cermets
53. Composite materials possess which of the following properties even at elevated temperatures? :->high strength **and high stiffness**
54. Copper has very low ----- :->tensile strength
55. Critical cooling rate of a steel depends upon ----- :->carbon content and alloying elements
56. Cyaniding process comprises of :->keeping low carbon steel in a cyanide bath maintained at 800°C
57. Dielectric ----- :->is an electrical insulating material
58. Dow metal contains mainly ----- and aluminium :->magnesium, copper
59. Duralumin is an alloy of aluminum, ----- :->copper and manganese
60. During tempering over a certain range of temperature, the presence of strong carbide forming alloys in steel -----
----- the hardness :->increases
61. Energy in the most stable state of an atom is ----- :->minimum
62. Fiber reinforced plastics are :->made of thermosetting resin and glass fiber and are anisotropic
63. Fine grain sizes are obtained by ----- :->fast cooling rate and increasing nucleation rate
64. Finer the austenitic grain size, the hardenability will be ----- :->less
65. For a metal to be forged, it should have: :->good malleability
66. For high carbon steels containing carbon more than 0.7%, the M_f temperature will be ----- :->below room temperature
67. For platinum thermocouples, lead wires are made of ----- :->copper and copper-nickel alloys
68. For polishing of surface, the abrasive material should possess: :->high hardness and numerous sharp cutting **edges**
69. German silver is an alloy of ----- :->copper, nickel and zinc
70. Hardenability depends on which of the following factors? :->grain size of austenite, carbon content and **alloying elements**
71. Hardenability is most commonly measured by ----- test :->jominy end quench test
72. Hardening temperature for high speed steels is -----°C :->1150-1350
73. Hardening temperature in induction hardening of medium carbon steel is about ----- °C :->750 - 800
74. In cyaniding: :->carbon and nitrogen are introduced into the surface of steel, and then it is quenched **hardened**
75. In jominy end quench test ----- shaped specimen is used. :->cylindrical
76. In most of the steels the amount of phosphorous is kept below ----- % :->0.05
77. In nitriding operation, some portion of the part may not require surface hardening. Such portion is protected from nitrogen by a layer of ----- :->tin

76. In stress-relief annealing of cold worked steel, the heating temperature will be between ----- $^{\circ}\text{C}$:->500

and 550

79. In the full annealing of hypoeutectoid steels, they are heated above ----- temperature :->upper critical **temperature**

80. Isoforming treatment of steels results in the formation of ----- :->pearlite

81. Jominy end quench test is used to measure ----- :->hardenability

82. Light weight metallic alloy used in aircraft industry is ----- :->duralumin

83. Low carbon steels ($C=0.2\%$), when subjected to cyaniding is heated in the cyanide bath to a temperature of -----
----- $^{\circ}\text{C}$:->800 - 870

84. Lower the critical cooling rate, the hardenability will be ----- :->more

85. Martempering results in the formation of ----- :->martensite

86. Martensitic stainless steel is the only type of stainless steels which is hardenable by heat-treatment, because of its
----- :->higher carbon to chromium ratio

87. Materials which undergo recoverable deformation of few hundred percent are called ----- :->elastomers

88. Materials with which of the following properties are preferred for mechanical design? :->high stiffness and high **modulus**

89. Matrix phase of a composite can be a ----- :->metal, ceramic or polymer

90. Microstructure of 0.6% carbon containing steel, when cooled slowly from 900 $^{\circ}\text{C}$ to room temperature, will contain ferrite and ----- :->cementite

91. Monel metal is an alloy of ----- :->nickel and copper

92. Muntz metal is an alloy of ----- :->copper and zinc

93. Nitriding produces case hardness of the order of ----- VPN :->1150

94. No heat-treatment process can be done after which of the following case hardening process? :->nitriding

95. Over heating of steel during annealing causes ----- :->surface decarburization

96. Penetration of carbon into steel during carburizing depends on ----- :->time, temperature and carburizing **agent**

97. Perspex is nothing but an ----- :->acrylic sheet

98. Phosphorus dissolves in ----- and increases the tensile strength and hardness of steel :->ferrite

99. Polymers having very strong interaction forces is suitable for making ----- :->fibers

100. Recrystallization annealing is done at a temperature of about ----- $^{\circ}\text{C}$:->625 to 675

101. Softening of high speed steel is done by annealing at ----- $^{\circ}\text{C}$:->850

102. Softening of quenched steel in tempering results from the transformation of martensite to ----- :-
>cementite and ferrite

103. Sorbite is the structure obtained by quenching austenite and then heating into the range of ----- $^{\circ}\text{C}$:-
>375-660

104. Spark plugs are made of ----- :->high alumina ceramic

105. Spheroidal is the structure obtained by quenching austenite and then heating into the range of ----- $^{\circ}\text{C}$
:->660-700

106. Stress-relief annealing is applicable to ----- steels :->low carbon steels

107. Subzerotreatment is used to transform :->retained austenite into martensite

108. Surface hardening of steel parts in an electrolytic bath containing sodium carbonate is based on a physical phenomenon called ----- :->cathode effect

109. Tank furnace used for melting of glass is made of ----- :->refractory blocks

110. The ability of a material to absorb energy in the elastic range is a measure of its ----- :->resilience

111. The ability of a material to offer resistance to scratching is called ----- :->hardness

112. The ability of a material to resist elastic deformation is known as ----- :->stiffness

113. The ability of a material to undergo large permanent deformation in tension is called ----- :-
>ductility

114. The ability of a material to undergo large permanent deformation in compression is called ----- :-
>malleability

115. The cold hardness of cemented carbide tipped tools exceeds ----- VPN :->1500

116. The colour of chromium oxide abrasive is ----- :->green
117. The composites made by dispersing particles of varying size and shape of one material in a matrix of another material is known as ----- :->particulate composite
118. The cooling rate for which of the following steels will be maximum in order to suppress the pearlitic or bainitic transformation? :->low carbon steels
119. The crystal structure of aluminium is ----- :->FCC
120. The crystal structure of copper is ----- :->FCC
121. The ease with which a steel piece can be hardened by martensitic transformation is known as ----- :->hardenability
122. The elastic modulus of which of the following is the highest? :->boron
123. The hardest material just prior to diamond in Ohm s scale of hardness is ----- :->corundum
124. The hardness obtained after hardening treatment of steel depends on ----- :->both carbon content **and alloying elements**
125. The hardness of martensite in a steel is a function of ----- :->Carbon content
126. The heat-treatment process which involves air cooling is ----- :->normalizing
127. The heat-treatment process which involves furnace cooling is ----- :->annealing
128. The microstructure of spheroidised annealed steel consists ----- :->globules of cementite in a **matrix of ferrite**
129. The minimum temperature that can be obtained by liquid air used for quenching is -----0C :->

183

130. The modulus of diamond is about ----- GN/m² :->1140
131. The most common ceramics are oxides, carbides and borides of ----- :->W, Cr and Ti
132. The most commonly used resin for making reinforced plastic is ----- :->unsaturated polyester
133. The presence of carbides, nitrides, inclusions etc. in austenite will ----- the hardenability :->reduce
134. The problems due to Sulphur are minimized by the addition of ----- to steels :->P
135. The properties of materials which opposes the creation of magnetic flux in them is called ----- :->reluctance
136. The purpose of tempering is to reduce----- :->hardness
137. The range of temperature maintained in carburizing is -----0C :->900 - 930
138. The range of tempering temperature for most of the materials is -----0C :->200-300
139. The softest material just next to talc in the Ohm s scale is ----- :->gypsum
140. The specific gravity is lower for which of the following materials? :->composites
141. The specific strength of which of the following materials is high? :->composites
142. The steels, while hardening by heat treatment becomes too brittle due to ----- :->martensite
143. The stiffness of a material is proportional to its ----- :->elastic modulus
144. The structure of martensite is ----- :->body centered tetragonal
145. The super saturated solution of carbon in ----- iron is known as martensite :->Alpha
146. The young s modulus of silica glass is about ----- GN/m² :->70
147. Thermosetting plastics: :->are cross-linked molecules
148. Thermosetting polymers are: :->cast molded
149. Troostite is the structure obtained by quenching austenite and then heating into the range of ----- 0C :->200-375
150. TTT diagrams are valid only for ----- :->Isothermal transformations of austenite
151. Vycor, a widely used material for making thermal wells in temperature measurement, is a ----- :->glass
152. When a 0.5%C steel is austenitized at 800C and furnace cooled, its micro structure at room temperature consists ----- :->37% ferrite and 63% pearlite
153. Which of the following abrasive is commonly available and is used for polishing of non-ferrous metals? :->brasso
154. Which of the following abrasive is used in the final polishing stage of soft metals? :->magnesium oxide

155. Which of the following abrasive material is used for polishing of very hard materials such as sintered carbides? :->diamond dust
156. Which of the following aluminum alloys is mainly used for anodized utensil manufacture? :->hinalium
157. Which of the following austenite shows more hardenability? :->homogeneous
158. Which of the following commercial metals is most abundantly found in India? :->Zinc
159. Which of the following element is an austenite stabilizer? :->Ni
160. Which of the following element is neither a carbide former nor a graphitizer? :->Co
161. Which of the following elements will reduce the eutectoid carbon when added to high carbon steels? :->Cr, W and Mo
162. Which of the following fibers can be used for preparing composites? :->glass, carbon or aramid fibers
163. Which of the following has high popularity as reinforcing material in composites? :->carbon
164. Which of the following heat-treatment processes results in minimum of internal stresses? :->annealing
165. Which of the following is a carbide forming element? :->Ti
166. Which of the following is a characteristic of fiber used in composites? :->high aspect ratio
167. Which of the following is a composite of a soft, but strong protein collagen, and brittle and hard material apatite? :->bone
168. Which of the following is a composite of cellulose fiber and lignin cementing materials? :->wood
169. Which of the following is a ferrite stabilizer? :->Si
170. Which of the following is a graphitizing element? :->Si and Ni
171. Which of the following is a layered composite? :->polywood
172. Which of the following is a natural composite? :->Wood
173. Which of the following is a particulate composite? :->cermet
174. Which of the following is a polymer matrix material used in composites? :->epoxy
175. Which of the following is a structure-insensitive property? :->modulus
176. Which of the following is a suitable light duty bearing material? :->phosphorous bronze
177. Which of the following is an alloy of nickel and copper? :->monel
178. Which of the following is an amorphous material? :->glass
179. Which of the following is not a graphitizing element? :->W
180. Which of the following is not an austenite stabilizer? :->Cr
181. Which of the following is not used as the ceramic material in cermets? :->nitrides
182. Which of the following is the high melting point non-ferrous metal? :->tungsten
183. Which of the following is the importance of full annealing? :->it relieves the internal stresses
184. Which of the following is the lightest of engineering metals? :->magnesium
185. Which of the following is the low melting point non ferrous metal/alloy? :->tin and its alloys
186. Which of the following is the lowest cost plastic commercially available? :-> Polythene
187. Which of the following is the most frequently applied method of heat-treatment for grey cast iron? :->stress relieving
188. Which of the following is the mostly used non-ferrous metal/alloy? :->aluminium and its alloys
189. Which of the following is true for steels? :->increasing in hardness due to carbon is more significant **than due to alloying elements**
190. Which of the following is true? :->coarse grained austenite has better hardenability than fine grained **austenite**
191. Which of the following is true? :->composite materials possess higher toughness than metals and **ceramics**
192. Which of the following is true? :->formation of martensite is accompanied by volume change
193. Which of the following is used for the hardening of teeth of spur gear? :->induction hardening
194. Which of the following materials get diffused in the surface layer of the steel parts subjected to nitriding operation for increasing its wear resistance property? :->mono atomic nitrogen
195. Which of the following materials possess high strength and stiffness even at elevated temperatures? :->composites
196. Which of the following methods is applied to eliminate retained austenite in steels? :->subzerotreatment

197. Which of the following property is true for composites compared to metals and ceramics? (b) :->They **possess high toughness**
198. Which of the steels cannot be hardened by quenching? :->low carbon steels
199. With work hardening, the ductility of a material will ----- :->decrease

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