PHYSICS OF SOLIDS

Each question has four possible answers, tick (▮) the correct answer:

1. Polymer solids are:

(a) Order solids **(b)** Disorder solids

(c) In b/w order and disorder **(d)** Neither type

2. Crystalline solids are:

(a) Order solid **(b)** Disorder solid

(c) In b/w order and disorder **(d)** All of above

3. Amorphous solids are:

(a) Order solid **(b)** Disorder solid

(c) In b/w order and disorder **(d)** None of the above

4. Amorphous solid are also called:

(a) Crystalline solid **(b)** Glassy solid

(c) Soft solid **(d)** Hard solid

5. Crystalline solid have:

(a) Definite melting point **(b)** Indefinite melting point

(c) In between **(d)** None of above

6. The solids are classified as:

(a) Polymeric **(b)** Amorphous

(c) Crystalline **(d)** All of above

7. Each atom in a crystalline vibrates about a fixed point with an amplitude that:

(a) Increases with rise in temperature **(b)** Decreases with rise in temperature

(c) Remains the same with rise in temperature **(d)** None of these

8. The transition from solid state to liquid state is actually from:

(a) Order to order **(b)** Disorder to order

(c) Order to disorder **(d)** None of these

9. The force which maintains the long-range order between atoms of crystalline solid is called:

(a) Gravitational force **(b)** Nuclear force

(c) Coulomb's force **(d)** Cohesive force

10. The word amorphous means:

(a) With definite structure **(b)** Without any structure

(c) Regular arrangement of atoms **(d)** None of these

11. An ordinary glass gradually softness into a paste like state before it becomes a very viscous liquid which is possible at:

(a) 900°C **(b)** 600°C

(c) 800°C **(d)** 100°C

12. A unit cell is the smallest basic structure which is:

(a) Two dimensional **(b)** One dimensional

(c) Three dimensional **(d)** None of these

13. The temperature at which the vibrations becomes so great that the structure of the crystal breaks is called:

(a) Melting point **(b)** Critical temperature

(c) Boiling point **(d)** None of these

14. The whole structure obtained by the repetition of unit cell is called:

(a) Crystalline solid **(b)** Amorphous solid

(c) Polymeric solid **(d)** Crystal lattice

15. Examples of polymeric solids are:

(a) Plastic **(b)** Zirconia

(c) NaCl **(d)** Copper

16. Examples of crystalline solids are:

(a) Copper **(b)** NaCl

(c) Zirconia **(d)** All of above

17. The substance which breaks after the elastic limit is called:

(a) Brittle **(b)** Organic

(c) Ductile **(d)** All of above

18. Ordinary glass becomes a very viscous liquid at:

(a) 600°C **(b)** 800°C

(c) 300°C **(d)** 100°C

19. Artificial polymers are made by a chemical reaction known as:

(a) Polymerization **(b)** Polarization

(c) Electroplating **(d)** All of the above

20. Which of the following are mechanical properties of a material:

(a) Ductility **(b)** Strength

(c) Stiffness **(d)** All of the above

21. The ratio of stress to strain is called:

(a) Modulus of elasticity **(b)** Young's modulus

(c) Bulk modulus **(d)** All of the above

22. The ratio of applied stress to tensile strain is called:

(a) Bulk modulus **(b)** Young modulus

(c) Shear modulus **(d)** None of the above

23. The ratio of the applied stress to volume strain is called:

(a) Bulk modulus **(b)** Young modulus

(c) Shear modulus **(d)** None of the above

24. The ratio of the applied stress to shear strain is called:

(a) Bulk modulus **(b)** Young modulus

(c) Shear modulus **(d)** None of the above

25. The prosperity of a material to return to its original shape and size on the removal of strain is called:

(a) Elasticity **(b)** Strain

(c) Plasticity **(d)** None of the above

26. When a body is subjected to some external force, deformation is produced in:

(a) Shape **(b)** Length

(c) Volume **(d)** Any of these

27. The results of mechanical tests are usually expressed in terms of:

(a) Strain **(b)** Stress

(c) Applied force **(d)** All of above

28. When the stress changes length of a body, it is called:

(a) Tensile strain **(b)** Shear strain

(c) Volumetric strain **(d)** None of these

29. When the stress changes the shape of the body it is called:

(a) Tensile strain **(b)** Shear strain

(c) Volumetric strain **(d)** None of these

30. When the stress changes the volume of the body, it is called:

(a) Tensile strain **(b)** Shear strain

(c) Volumetric strain **(d)** None of these

31. A stress which decreases the length along one dimension is known as:

(a) Compressive stress **(b)** Tensile stress

(c) Linear stress **(d)** None of these

32. Bulk Modulus is involved when the deformation is:

(a) Two dimensional **(b)** Three dimensional

(c) One dimensional **(d)** None of these

33. For practical purposes, the proportional limit for ductile material is:

(a) Smaller than elastic limit **(b)** Greater than elastic limit

(c) Identical to the elastic limit **(d)** None of these

34. When the specimen does not recover its original shape after the stress is removed, its behaviour is called:

(a) Ductility **(b)** Deformation

(c) Plasticity **(d)** Elasticity

35. Yield stress is another name of:

(a) Plasticity **(b)** Proportional limit

(c) Elastic limit **(d)** Both (b) and (c)

36. The ultimate tensile strength (UTS) is the:

(a) Maximum strength that a material can with stand

(b) Minimum strength

(c) Minimum strength that a material can withstand

(d) Both (a) and (c)

37. Once the stress is increased than UTS, the material falls into the region of:

(a) Fracture stress **(b)** Elastic limit

(c) Proportional limit **(d)** None of these

38. A steel wire 20 mm in diameter is stretched by a force of 113 N. The tensile stress applied is:

(a) 1 MPa **(b)** 10^{-6} N/m^2

(c) 0.1 MPa **(d)** 0.2×10^6 Pa

39. The area method for finding strain energy is useful for:

(a) Linear part **(b)** Non-elastic part

(c) Linear part of the force-extension graph **(d)** None of these

40. The strain energy in a deformed wire is actually the gain in the:

(a) Kinetic energy of its molecules **(b)** Potential energy of its molecules

(c) K.E and P.E of the its molecules **(d)** Gravitational P.E of its molecules

41. The force applied on a unit area to produce any change in shape, volume and length is called:

(a) Stress **(b)** Strain

(c) Elasticity **(d)** Plasticity

42. Hook's law states that the strain is directly proportional to:

(a) Power **(b)** Shear

(c) Force **(d)** Energy

43. Molecules of a solid possess:

(a) Rotatory motion **(b)** Vibratory motion

(c) Circular motion **(d)** Translatory motion

44. Force applied on a unit area is called:

(a) Strain **(b)** Stress

(c) Elasticity **(d)** Fracture strain

45. The SI unit of stress is:

(a) N-S **(b)** $N\text{-}m^{-2}$

(c) N-m **(d)** N

46. A stress which changes one dimension only is:

(a) Linear strain **(b)** Linear stress

(c) Elasticity **(d)** None of the above

47. The dimension of stress is:

(a) $[MLT^{-1}]$ **(b)** $[ML^{-1}T]$

(c) $[ML^{-1}T^{-1}]$ **(d)** $[ML^{-1}T^{-2}]$

48. The dimension of strain is:

(a) [L] **(b)** $[LT^{-1}]$

(c) $[L^{-1}]$ **(d)** Dimension less

49. The maximum stress which a body can bear is:

(a) Plastic stress **(b)** Elastic stress

(c) UTS **(d)** None of the above

50. Mathematically stress ca be expressed as:

(a) $E = \frac{F}{A}$ **(b)** $\sigma = \frac{F}{A}$

(c) $\gamma = \frac{\Delta a}{a}$ **(d)** None of the above

51. The extension produced in a sample of material depends upon:

(a) Area **(b)** Force

(c) Nature of material **(d)** All of the above

52. Mathematically the tensile strain can be expressed as:

(a) $\varepsilon = \frac{\Delta l}{l}$ **(b)** $\sigma = F/A$

(c) $\gamma = \frac{\Delta a}{a}$ **(d)** None of the above

53. If ΔV be the change in volume and V is the original volume, the volume strain is given by:

(a) $\frac{\Delta V}{V}$ **(b)** $\frac{V}{\Delta V}$

(c) ΔV **(d)** None of the above

54. If Δl is the change in length and l is the original length then tensile strain can be expressed as:

(a) $\in = l.\Delta l$ **(b)** $\in = \frac{\Delta l}{l}$

(c) $\in = \frac{l}{\Delta l}$ **(d)** None of these

55. A solid that is intermediate between order and disorder is called:

(a) Polymeric solids **(b)** Glassy solid

(c) Amorphous solids **(d)** None of these

56. Materials have specific uses depending upon their characteristics and properties such as:

(a) Hardness **(b)** Conducting or magnetic

(c) Ductility **(d)** All of above

57. Example of polymeric solid:

(a) Polythene **(b)** Plastic

(c) Nylon **(d)** All of above

58. Whole structure of solid obtain by the repetition of unit cells is called:

(a) Polymer **(b)** Crystal lattice

(c) Amorphous **(d)** None of these

59. Measure of deformation of body with application of stress is called:

(a) Rigidity **(b)** Modulus of elasticity

(c) Elasticity **(d)** Strain

60. Bulk modulus of elasticity is given by:

(a) $E = \dfrac{F/A}{\dfrac{\Delta l}{l}}$ **(b)** $K = \dfrac{F/A}{\dfrac{\Delta V}{V}}$

(c) $G = \dfrac{F/A}{\text{Tan}\,\theta}$ **(d)** F/A

61. Solids with high value of conductivity are called:

(a) Conductors **(b)** Semi-conductors

(c) Insulators **(d)** Plasticity

62. Any change produced in shape, volume or length when a body is subjected some external force is called:

(a) Yield point **(b)** Elastic limit

(c) Deformation **(d)** Plasticity

63. Modulus of elasticity of material is:

(a) $\dfrac{\text{Stress}}{\text{Strain}}$ **(b)** $\dfrac{\text{Strain}}{\text{Stress}}$

(c) Stress × Strain **(d)** None of these

64. The value of stress beyond which the body is permanently deformed is called:

(a) Mini-stress **(b)** Yield stress

(c) Maxi-stress **(d)** None of these

65. The conductors having the conductivity of the order of:

(a) $10^{-4}\ (\Omega - m)^{-1}$ **(b)** $10^{7}\ (\Omega\ m)^{-1}$

(c) $10^{-10}\ (\Omega - m)^{-1}$ **(d)** $10^{-7}\ (\Omega - m)^{-1}$

66. Insulators have the conductivity of the order of:

(a) $10^{7}\ (\Omega\ m)^{-1}$ **(b)** $10^{-6}\ (\Omega\ m)^{-1}$

(c) $10^{-20}\ (\Omega\ m)^{-1}$ **(d)** $10^{-4}\ (\Omega\ m)^{-1}$

67. The substances which have partially filled conduction bands are called:

(a) Conductors **(b)** Insulator

(c) Semi-conductor **(d)** Super Conductor

68. A conduction band is always:

(a) Partially filled **(b)** Complete filled

(c) Partially empty **(d)** Empty

69. The conduction band lies:

(a) Inside the valance band **(b)** Below valance band

(c) Above valance band **(d)** None of these

70. The electrons occupying by conduction band are:

(a) Free electrons **(b)** Valance electrons

(c) Conductive electrons **(d)** All of above

71. The band below the valance band is:

(a) Empty band **(b)** Partially filled band

(c) Completely filled band **(d)** All of above

72. The theory failed to explain the complete electric behaviour of solid:

(a) Rutherford's theory **(b)** Newton's theory

(c) Bohr's theory **(d)** None of the above

73. The examples of conductors are:

(a) Copper **(b)** Diamond

(c) Wood **(d)** Germinium

74. The examples of insulators are:

(a) Diamond **(b)** Wood

(c) Zinc **(d)** Both (a) and (b)

75. Valence band:

(a) Contains valence electron **(b)** Contains no valence electron

(c) Highest occupied band **(d)** Lowest occupied band

76. Valence band may be:

(a) Completely filled **(b)** Partially filled

(c) Both (a) and (b) **(d)** None of these

77. Conduction band may be:

(a) Partially filled with electrons **(b)** Empty

(c) Not empty **(d)** None of these

78. Those materials in which valence and conduction bands are overlap each other are called:

(a) Conductors **(b)** Insulators

(c) Semi-conductors **(d)** None of these

79. Partially filled conduction and valence bands with a very narrow forbidden energy gap in between them shows the:

(a) Conductors **(b)** Insulators

(c) Semi-conductors **(d)** None of these

80. When a battery is connected to a semi-conductor, the current passes through it is due to:

(a) Electrons and holes **(b)** Protons and holes

(c) Electrons **(d)** Holes

81. On introducing a small amount of impurity into a pure semi-conductor, its electrical behaviour:

(a) does not change **(b)** is changed

(c) is changed very small **(d)** is changed very large

82. To form an N-type semi-conductor, silicon crystal is doped with:

(a) Penta valent element **(b)** Trivalent element

(c) Both (a) and (b) **(d)** None of these

83. An example of donor impurity is:

(a) Phosphorus **(b)** Indium

(c) Boron **(d)** Gallium

84. To form a P-type semi-conductor, silicon is doped with:

(a) Germanium **(b)** Arsenic

(c) Indium **(d)** Antimony

85. An example of acceptor impurity is:

(a) Phosphorus **(b)** Indium

(c) Arsenic **(d)** Silicon

86. An P-type substance is:

(a) Neutral **(b)** Positively charged

(c) Negatively charged **(d)** None of these

87. An N-type substance is:

(a) Neutral **(b)** Positively charged

(c) Negatively charged **(d)** None of these

88. Conductors have:

(a) Partially filled valance band **(b)** Partially filled conduction band

(c) Narrow forbidden gap **(d)** All of above

89. The doped semi-conducting materials are called:

(a) Superconductors **(b)** Poor semi conductors

(c) Pure semi conductors **(d)** Extrinsic semi conductors

90. When a Germinium is doped with pentavalent impurity, the doped semi conductor is:

(a) p-type **(b)** n-type

(c) Both (a) and (b) **(d)** None of the above

91. When a covalent bond is broken in a doped semi conductor:

(a) An electron is created **(b)** A proton and electron are created

(c) A hole is created **(d)** A pair of hole and electron are created

92. The material whose resistivity becomes zero below a certain temperature:

(a) Conductors **(b)** Semi conductors

(c) Super conductors **(d)** Insulators

93. The energy band occupying valance electrons is known as:

(a) Conductive electrons **(b)** Valance electrons

(c) Free electrons **(d)** Both (a) and (c)

94. The energy band occupying free electrons is called:

(a) Conduction band **(b)** Valance band

(c) Forbidden gap **(d)** None of these

95. An example of an intrinsic semi conductor is:

(a) Al **(b)** Ge

(c) Cb **(d)** Ph

96. An example of an extrinsic semi conductor is:

(a) Si **(b)** ph

(c) Al **(d)** Both (b) and (c)

97. The supper conductor was discovered by:

(a) Lenz **(b)** Orested

(c) Kmaerlingh ornes **(d)** Faraday

98. The first super conductor was discovered in:

(a) 1923 **(b)** 1917

(c) 1905 **(d)** 1911

99. The resistance of mercury becomes zero at the temperature:

(a) Below 4.2 K **(b)** to 4.2 K

(c) Above 4.2 K **(d)** None of these

100. A new class of ceramic materials was discovered in:

(a) 1986 **(b)** 1978

(c) 1938 **(d)** 1958

101. Lead becomes super conductor at temperature:

(a) 12.66 K **(b)** 7.2 K

(c) 3.0 K **(d)** 2.5 K

102. Super conductors are used in:

(a) Magnetic Levitation train **(b)** Fast computer chip

(c) Magnetic resonance imaging **(d)** All of the above

103. Semi conductor is one which has:

(a) Large conductivity **(b)** Less conductivity

(c) Zero conductivity **(d)** Intermediate conductivity

104. On doping, the conductivity of the semi conductor:

(a) Remains constant **(b)** Increases

(c) Decreases **(d)** None of the above

105. What type of impurity is to be added to the semi conductor material to provide hole:

(a) Pentavalent **(b)** Trivalent

(c) Monovalent **(d)** None of these

106. A p-type material is:

(a) Negatively charged **(b)** Positive charged

(c) Neutral **(d)** None of these

107. A metallic conductors conduct electricity because they have large number of free:

(a) Ions **(b)** Electrons

(c) Protons **(d)** Dipoles

108. A n-type material is:

(a) Negatively charged **(b)** Positively charged

(c) Both (a) and (b) **(d)** Neutral

109. Semi conductors have electrical conductivities which:

(a) Are high at ordinary temperature **(b)** Increase with temperature

(c) Decrease with temperature **(d)** None of these

110. A hole in p-type semi conductor is:

(a) Deficiency of electron **(b)** Excess of electron

(c) A missing proton **(d)** None of these

111. In a semi conductor, the mobility of holes is:

(a) Equal to electrons **(b)** Less than electrons

(c) Greater than electrons **(d)** None of these

112. In semi conductor, the holes and electrons move in:

(a) Opposite direction **(b)** Same direction

(c) Perpendicular to each other **(d)** None of these

113. A trivalent impurity is usually called:

(a) Donar **(b)** Accepter

(c) Transistor **(d)** Transformer

114. Recently a complex crystalline structure known as yttrium barium copper oxide ($Yba_2 Cu_3 O_3$) have reported to become super conductor at:

(a) 163 K **(b)** 169 K

(c) 200 K **(d)** 100 K

115. Substances whose atoms are magnetic dipole are called:

(a) Diamagnetic substance **(b)** Ferromagnetic substance

(c) Paramagnetic substance **(d)** All of these

116. An atom having resultant magnetic field:

(a) behaves like a tiny magnet **(b)** is called magnetic dipole

(c) is called diamagnetic **(d)** all of above

117. Magnetic field produced by spinning nucleus is:

(a) much weaker **(b)** is the same

(c) much stronger **(d)** none of these

118. The term domain refers mainly to:

(a) Paramagnetic substance **(b)** Diamagnetic substances

(c) Ferromagnetic substances **(d)** None of these

119. An electromagnet is the combination of solenoid and a specimen of:

(a) Steel inside it **(b)** Iron inside it

(c) Iron outside it **(d)** Wood inside it

120. Soft magnetic materials are used for making:

(a) Permanent magnets **(b)** Electromagnets

(c) Both (a) and (b) **(d)** None of these

121. Curie temperature is:

(a) Different for chromium oxide and cobalt **(b)** Same for chromium oxide and cobalt

(c) Same for iron and cobalt **(d)** None of these

122. Substances whose atoms do not form magnetic dipole are:

(a) Ferromagnetic **(b)** Paramagnetic

(c) Diamagnetic **(d)** All of these

123. Iron is a magnetic material:

(a) Soft **(b)** Hard

(c) Both (c) and (b) **(d)** None of these

124. The steel makes a good permanent magnet and is called:

(a) soft **(b)** hard

(c) in between **(d)** None of these

125. Ferromagnetic substance have the small regions are called:

(a) Magnets **(b)** Patches

(c) Domains **(d)** None of these

126. The curie temp for iron is about:

(a) 800°C **(b)** 740°C

(c) 750°C **(d)** 650°C

127. The process of introduces a small amount of impurity into the pure semi conductor is called:

(a) Overlapping **(b)** Mixing

(c) Doping **(d)** None of these

128. Which of the following are example of diamagnetic substances:

(a) Antimony **(b)** Cobalt

(c) Copper **(d)** Both (a) and (c)

129. Which of the following is not a ferromagnetic substances:

(a) Copper **(b)** Steel

(c) Iron **(d)** Cobalt

130. The permeability of diamagnetic materials:

(a) Less than one **(b)** Greater than one

(c) Equal to one **(d)** Zero

131. The temp at which a ferromagnetic disappear, the substance becomes paramagnetic is known as:

(a) Critical temperature **(b)** Curie temperature

(c) Absolute temperature **(d)** All of above

132. The area of hysteresis loop is proportional to the work done in:

(a) Magnetizing of the substance **(b)** Reversing the magnetic field

(c) Demagnetizing the substance **(d)** None of these

133. If a material sets up a magnetic field which opposes the applied magnetic field it is said to be:

(a) Electromagnetic **(b)** Diamagnetic

(c) Paramagnetic **(d)** None of these

134. The domain theory of magnet is important to explain the behaviour of:

(a) Diamagnets **(b)** Paramagnets

(c) Ferromagnets **(d)** All of these

135. A pentaralent impurity in Si:

(a) a free electron and a free hole **(b)** a free hole

(c) a free electron **(d)** No free particle

136. Unit of specific gravity:

(a) m/s^2 **(b)** No unit

(c) kg/m^3 **(d)** J/m^3

137. Unit of Bulk modulus is:

(a) No unit **(b)** N/m^2

(c) N/P_a **(d)** $P_a(m)$

138. Formula for strain energy in deformed materials is:

(a) $\frac{1}{2}\frac{EAl_1^2}{L}$ **(b)** $\frac{EAl_1^2}{2}$

(c) $\frac{1}{3}\frac{EAl_1}{L}$ **(d)** $\frac{1}{2}\frac{EAl_1}{L^2}$

139. At 0 K a piece of silicon is a:

(a) Conductor **(b)** Semi-conductor

(c) Insulator **(d)** All

140. Gallium belongs to ———— group.

(a) 4^{th} **(b)** 2^{nd}

(c) 7^{th} **(d)** 3^{rd}

141. Polythene, polystyrene and nylon etc., are examples of:

(a) Crystalline **(b)** Amorphous

(c) Polymers **(d)** None of these

142. Polymers have ———— specific gravity compared with even the lightest of metals.

(a) High **(b)** Low

(c) Zero **(d)** None of these

143. The strength to weight ratio of plastic material (chair) is ———— then steel material (chair).

(a) Greater **(b)** Lesser

(c) Same **(d)** None of these

144. There are ———— different crystal systems based as the geometrical arrangement of their atoms and the material breaks at a point, responding the ————.

(a) 2 **(b)** 7

(c) 3 **(d)** 5

145. Coercive force is used to:

(a) Demagnetize the material **(b)** Magnetize the material

(c) Extend it **(d)** None of these

146. Net charge on n-type material is:

(a) Positive **(b)** Negative

(c) Neutral **(d)** All

147. Energy needed to magnetize and demagnetize is given by:

(a) Hysteresis curve **(b)** Area of loop

(c) Coercivity **(d)** None of these

148. Yttrium bearium copper oxide ($YBa_2Cu_3O_7$) become superconductor at:

(a) 163 K **(b)** $-110°C$

(c) Both (a), (b) **(d)** None of these

149. Which of following has the highest elasticity?

(a) Rubber **(b)** Steel

(c) Glass **(d)** All

150. Which of the following has bulk modulus?

(a) Water **(b)** Gas

(c) Honey **(d)** All

151. The power dissipated in a resistor is the same for a constant potential difference V as for a sinusoidal potential difference with peak value V_0. Which of the following is the correct relationship between V and V_0?

(a) $V_0 = \frac{V}{2}$ **(b)** $V_0 = \frac{V}{\sqrt{2}}$

(c) $V_0 = V$ **(d)** $V_0 = \sqrt{2}V$

152. A sinusoidal alternating current of peak value I_0 passes through a heater of resistance R. What is the mean power output of the heater?

(a) $\frac{I_0^2 R}{2}$ **(b)** $\frac{I_0^2 R}{\sqrt{2}}$

(c) $I_0^2 R$ **(d)** $\sqrt{2}\, I_0^2 R$

153. An alternating current I/A varies with time t/s according to the equation.

$$I = 5\sin(100\pi t)$$

What is the mean power developed by the current in a resistive load of resistance 10Ω?

(a) 125W **(b)** 160W

(c) 250W **(d)** 500W

154. An alternating current of root-mean-square value 2A in a given resistor dissipates energy at the same rate as a steady direct current I in another resistor of the same value. What is the value of I?

(a) $\sqrt{2}$ A **(b)** 2A

(c) $2\sqrt{2}$ A **(d)** 4A

ANSWERS

1.	(c)	**2.**	(a)	**3.**	(b)	**4.**	(b)	**5.**	(a)
6.	(d)	**7.**	(a)	**8.**	(c)	**9.**	(d)	**10.**	(b)
11.	(c)	**12.**	(c)	**13.**	(a)	**14.**	(d)	**15.**	(a)
16.	(d)	**17.**	(a)	**18.**	(b)	**19.**	(a)	**20.**	(d)
21.	(a)	**22.**	(b)	**23.**	(a)	**24.**	(c)	**25.**	(a)
26.	(d)	**27.**	(d)	**28.**	(a)	**29.**	(b)	**30.**	(c)
31.	(c)	**32.**	(b)	**33.**	(c)	**34.**	(c)	**35.**	(c)
36.	(a)	**37.**	(a)	**38.**	(a)	**39.**	(c)	**40.**	(b)
41.	(a)	**42.**	(c)	**43.**	(b)	**44.**	(b)	**45.**	(b)
46.	(b)	**47.**	(d)	**48.**	(d)	**49.**	(c)	**50.**	(b)
51.	(d)	**52.**	(a)	**53.**	(a)	**54.**	(b)	**55.**	(a)
56.	(d)	**57.**	(d)	**58.**	(b)	**59.**	(d)	**60.**	(b)
61.	(a)	**62.**	(c)	**63.**	(a)	**64.**	(b)	**65.**	(b)
66.	(c)	**67.**	(a)	**68.**	(a)	**69.**	(c)	**70.**	(d)
71.	(c)	**72.**	(c)	**73.**	(a)	**74.**	(d)	**75.**	(a)
76.	(c)	**77.**	(a)	**78.**	(a)	**79.**	(c)	**80.**	(a)
81.	(b)	**82.**	(a)	**83.**	(a)	**84.**	(c)	**85.**	(b)
86.	(a)	**87.**	(a)	**88.**	(d)	**89.**	(d)	**90.**	(b)
91.	(d)	**92.**	(c)	**93.**	(d)	**94.**	(b)	**95.**	(b)
96.	(d)	**97.**	(c)	**98.**	(d)	**99.**	(a)	**100.**	(a)
101.	(b)	**102.**	(d)	**103.**	(d)	**104.**	(b)	**105.**	(b)
106.	(c)	**107.**	(b)	**108.**	(d)	**109.**	(b)	**110.**	(a)
111.	(b)	**112.**	(a)	**113.**	(b)	**114.**	(a)	**115.**	(c)
116.	(d)	**117.**	(a)	**118.**	(c)	**119.**	(b)	**120.**	(c)
121.	(a)	**122.**	(c)	**123.**	(a)	**124.**	(b)	**125.**	(c)
126.	(c)	**127.**	(c)	**128.**	(d)	**129.**	(a)	**130.**	(a)
131.	(b)	**132.**	(d)	**133.**	(b)	**134.**	(c)	**135.**	(c)
136.	(b)	**137.**	(b)	**138.**	(a)	**139.**	(b)	**140.**	(d)
141.	(c)	**142.**	(b)	**143.**	(a)	**144.**	(b)	**145.**	(a)
146.	(c)	**147.**	(b)	**148.**	(c)	**149.**	(b)	**150.**	(b)
151.	(d)	**152.**	(a)	**153.**	(a)	**154.**	(c)		