86. The work done in rotating a magnet of magnetic moment M by an angle of 90° from the external magnetic field direction is 'n' times the corresponding work done to turn it through an angle of 60°. Where 'n' gives by :–

(1) 1/2 (2) 2 (3) 1/4 (4) 1

Ans. (2)

87. Magnetic field lines produced by a bar magnet, cuts each other :–

(1) At neutral points (2) Near the poles of the magnets

(3) At equatorial axis (4) Never intersects to each other

Ans. (4)

EARTH MAGNETIC FIELD

88. If the angel of dip at two places are 30° and 45° respectively, then the ratio of horizontal component of earth's magnetic field at two places assuming magnitude of total magnetic field of earth is same, will be :–

(1) (2) (3) (4) 1 : 2

Ans. (1)

89. Two bar magnets having same geometry with magnetic moments M and 2M, are firstly placed in such a way that their similar poles are same side then its time period of oscillation is T_1. Now the polarity of one of the magnet is reversed then time period of oscillation is T_2, then :

(1) $T_1 < T_2$ (2) $T_1 = T_2$ (3) $T_1 > T_2$ (4) $T_2 = \infty$

Ans. (1)

90. Magnetic field of earth is 0.3 gauss. A magnet oscillating with rate of 5 oscillation/min. How much the magnetic field of earth is increased, so the number of oscillations become 10 per min :–

(1) 0.3G (2) 0.6 G (3) 0.9G (4) 1.2G

Ans. (3)

91. A magnet makes 40 oscillations per minute at a place having magnetic field of 0.1×10^{-5} T. At another place, it takes 2.5 sec to complete one vibration. The value of earth's horizontal field at that place is :–

(1) 0.25×10^{-6} T (2) 0.36×10^{-6} T (3) 0.66×10^{-8} T (4) 1.2×10^{-6} T

Ans. (2)

92. The magnetic needle of a tangent galvanometer is deflected at an angle 30°. The horizontal component of earth's magnetic field 0.34×10^{-4} T is along the place of the coil. The magnetic field of coil :–

(1) 1.96×10^{-4} T (2) 1.96×10^{-5} T (3) 1.96×10^{4} T (4) 1.96×10^{5} T

Ans. (2)

MAGNETIC PROPERTIES OF MATERIALS

93. For protecting a magnetic needle it should be placed :–

(1)in an iron box (2) in wooden box (3) in metallic box (4) none of these

Ans. (1)

94. Which of the following materials is repelled by an external magnetic field :–

(1) Iron (2) Cobalt (3) Steel (4) Copper

Ans. (4)

95. If a diamagnetic material is placed in a magnetic field, the flux density inside the material compared to that outside will be :–

(1) Slightly less (2) Slightly more (3) Very much more (4) Same

Ans. (1)

96. To protect a sensitive instrument from external magnetic jerks, it should be placed in a container made of :–

(1)Non magnetic substance (2) Diamagnetic substance

(3) Paramagnetic substance (4) Ferromagnetic substance

Ans. (4)

97. Substances in which the magnetic moment of a single atom is not zero, are known as :–

(1) Diamagnetic (2) Ferromagnetic (3) Paramagnetic (4) (2) and (3) both

Ans. (4)

98. Susceptibility of a magnetic substance is found to depend on temperature and the strength of the magnetising field. The material is a :–

(1) Diamagnetic (2) Ferromagnetic (3) Paramagnetic (4) Superconductor

Ans. (2)

99. Property possessed by only ferromagnetic substance is :–

(1) Attracting magnetic substance

(2) Hysteresis

(3) Susceptibility independent of temperature

(4) Directional property

Ans. (2)

100. The hard ferromagnetic material is characterized by :–

(1) Narrow hysteresis loop

(2) Broad hysteresis loop

(3) High mechanically hardness, all over

(4) Mechanically hard surface

Ans. (2)

101. The magnetic moment of paramagnetic materials is :–

(1) Infinity (2) Zero (3) Constant but low (4) None of above

Ans. (2)

102. The cause of paramagnetismis :–

(1) Unpaired electrons

(2) Electron excess and spin motion of electrons

(3) Paired electrons and orbital motion of electrons

(4) Electrons and orbital motion of electrons

Ans. (2)

103. The cause of diamagnetism is :–

(1) Orbital motion of electrons

(2) Spin motion of electrons

(3) Paired electrons

(4) None of the above

Ans. (1)

104. The magnetic moment of diamagnetic materials is :–

(1) Infinity (2) Zero

(3) 100 amp–m^2 (4) None of the above

Ans. (2)

105. Which of the following statements is correct for diamagnetic materials :–

(1)$\mu_r < 1$ (2) χ is negative and low

(3) χ does not depend on temperature (4) All of the above

Ans. (4)

106. The area of B–H loop for soft iron, as compared to that for steel is :–

(1) More (2) Less (3) Equal (4) None of the above

Ans. (2)

107. The liquid in the watch glass in the following figure is :–

(1) Ferromagnetic (2) Paramagnetic (3) Diamagnetic (4) Nonmagnetic

Ans. (2)

108. Powerful permanent magnets are made of :–

(1) Cobalt (2) Aluminum (3) Tin–coal (4) Cobalt–steel

Ans. (4)

109. Which of the following statements is correct for ferromagnetic material :–

(1) These become diamagnetic at Curie temperature

(2) These become paramagnetic at Curie temperature

(3) Their magnetic susceptibility becomes zero at Curie temperature

(4) Its magnetic properties are explained on the basis of electron principle

Ans. (2)

110. A material rod, when placed in a strong magnetic field, aligns itself at right angles to the magnetic field. The nature of material is :–

(1) Diamagnetic (2) Paramagnetic

(3) Ferromagnetic (4) Low ferromagnetic

Ans. (1)

111. The relative permeability of air is :–

(1) Zero (2) 1.04 (3) Infinity (4) 1

Ans. (2)

112. If the magnetic susceptibility of a magnetic material is –0.004 then its nature will be :–

(1) Diamagnetic (2) Paramagnetic (3) Ferromagnetic (4) Non magnetic

Ans. (1)

113. The correct measure of magnetic hardness of a material is :–

(1)Ramnant magnetism (2) Hysteresis loss

(3) Coercivity (4) Curie temperature

Ans. (3)

114. If the relative permeability of a material is 0.9999 then its nature will be :–

(1) Paramagnetic (2) Diamagnetic (3) Ferromagnetic (4) Non–magnetic

Ans. (2)

115. The magnetic susceptibility of a paramagnetic material at –73°C is 0.0075 then its value at –173°C will be :–

(1) 0.0045 (2) 0.0030 (3) 0.015 (4) 0.0075

Ans. (3)

116. When a magnetic substance is heated, then it :

(1) Becomes a strong magnet (2) Losses its magnetism

(3) Does not effect the magnetism (4) Either (1) or (3)

Ans. (2)

117. Diamagnetic substance are :–

(1) Feebly attracted by magnets (2) Strongly attracted by magnets

(3) Feebly repelled by magnets (4) Strongly repelled by magnets

Ans. (3)

118. If a diamagnetic solution is poured into a U–tube and one arm of this U–tube placed between the poles of a strong magnet with the meniscus in a line with the field, then the level of the solution will :–

(1) Rise (2) Fall (3) Oscillate slowly (4) Remain as such

Ans. (2)

119. Magnetic permeability is maximum for :

(1) Diamagnetic substance (2) Paramagnetic substance

(3) Ferromagnetic substance (4) All of these

Ans. (3)

120. Which one of the following is ferro–magnetic :–

(1) Co (2) Zn (3) Hg (4) Pt

Ans. (1)

121. For paramagnetic materials magnetic susceptibility is related with temperature as :–

(1)$\propto T^2$ (2) $\propto T^1$ (3) $\propto T^{-1}$ (4) $\propto T^{-2}$

Ans. (3)

122. According to Curie's law, the magnetic susceptibility of a substance at an absolute temperature T is proportional to :–

(1) 1/T (2) T (3) $1/T^2$ (4) T^2

Ans. (1)

123. A diamagnetic material in a magnetic field moves

(1)from stronger to the weaker parts of the field

(2) from weaker to the stronger parts of the field

(3) perpendicular to the field

(4) in none of the above directions

Ans. (1)

124. Diamagnetic substances characteriseby :–

(1)low and negative magnetic susceptibility

(2) low and positive magnetic susceptibility

(3) high and negative magnetic susceptibility

(4)high and positive magnetic susceptibility

Ans. (1)

125. Magnetic suceptibility of a diamagnetic substance varies with absolute temperature as :–

(1)directly proportional to T

(2) inversely proportional to T

(3) remains unchanged with T

(4) exponential decreases with T

Ans. **(3)**