**AIR and DD Model Question Papers 2011:**

**75. The total charge induced in a conducting loop when it is moved in magnetic field depends**

**on?**

(a) the rate of change of magnetic flux

(b) initial magnetic flux only

(c) the total change in magnetic flux

(d) final magnetic flux only.

Ans:c

**76. The magnetic induction at a point P which is at the distance of 4 cm from a long current**

**carrying wire is 10-3 T. The field of induction at a distance 12 cm from the current will be ?**

(a) 3.33 x 10-4 T

(b) 1.11x 10-4 T

(c) 3×10-3 T

(d) 9×10-3 T

Ans:a

**77. A charge moving with velocity v in X-direction is subjected to a field of magnetic induction**

**in negative X-direction. As a result, the charge will**

(a) remain unaffected

(b) start moving in a circular path in Y—Z plane

(c) retard along X-axis

(d) moving along a helical path around X-axis

Ans:a

**78. A uniform magnetic field acts right angles to the direction of motion of electrons. As a result,**

**the electron moves in a circular path of radius 2cm. If the speed of electrons is doubled, then the**

**radius of the circular path will be ?**

(a)2.0 cm

(b) 0.5 cm

(c)4.0cm

(d) 1.0cm

Ans:c

**79. A deuteron of kinetic energy 50 keV is describing a circular orbit of radius 0.5 metre in a**

**plane perpendicular to magnetic field B. The kinetic energy of the proton that describes a circular**

**orbit of radius 0.5 metre in the same plane with**

the same B is

(a)25 keV

(b) 50 keV

(c)200 keV

(d) 100 keV

Ans:d

**80. A straight wire of length 0.5 metre and carrying a current of 1.2 ampere is placed in uniform**

**magnetic field of induction 2 Tesla. The magnetic field is perpendicular to the length of the wire.**

**The force on the wire is ?**

(a) 2.4N

(b) 1.2N

(c) 3.0 N

(d) 2.0 N

Ans:b

**81. To convert a galvanometer into an ammeter, one needs to connect a ?**

(a) low resistance in parallel

(b) high resistance in parallel

(c) low resistance in series

(d) high resistance in series.

Ans:a

**82. A coil carrying electric current is placed in uniform magnetic field**

(a) torque is formed

(B) e.m.f is induced

(c) both (a) and (b) are correct

(d) none of the above

Ans:a

**83. The magnetic field at a distance ‘r’ from a long wire carrying current ‘i’ is 0.4 Tesla. The**

**magnetic field at a distance ‘2r’ is ?**

(a)0.2Tesla

(b) 0.8 Tesla

(c)0.1 Tesla

(d) 1.6 Tesla

Ans:a

**84. A electron enters a region where magnetic (B) and electric (E) fields are mutually**

**perpendicular, then ?**

(a) it will always move in the direction of B

(b) it will always move in the direction of E

(c) it always possesses circular motion

(d) it can go un deflected also.

Ans:d

**85. A straight wire of diameter 0.5 mm carrying a current of 1 A is replaced by another wire of I**

**mm diameter carrying same current. The strength of magnetic field far away is?**

(a) twice the earlier value

(b) same as the earlier value

(c) one-half of the earlier value

(d) one-quarter of the earlier value

Ans:b

**86. At what distance from a long straight wire carrying a current of 12 A will the magnetic field**

**be equal to 3×10-6 Wb/metre Square**

(a) 8×10-2 m

(b) 12×10-2 m

(c)18x 10-2 m

(d) 24×10-2 m

Ans:a

**87. An electron moves in a circular orbit with a uniform speed v. It produces a magnetic field B**

**at the centre of the circle. The radius of the circle is proportional to ?**

(a) ?(B/v)

(b) B/v

(c) ?(v/B)

(d)v/B

Ans:d

**88. A 10 eV electron is circulating in a plane at right angles to a uniform field at magnetic**

**induction 10-4 Wb/m2 (= 1.0 gauss). The orbital radius of the electron is ?**

(a) 12cm

(b) 16cm

(c) 11cm

(d) 18cm

Ans:c

**89. A galvanometer acting as a voltmeter will have?**

(a) a low resistance in series with its coil.

(b) a high resistance in parallel with its coil

(c) a high resistance in series with its coil

(d) a low resistance in parallel with its coil

Ans:c

**90. A beam of electrons is moving with constant velocity in a region having simultaneous**

**perpendicular electric and magnetic fields of strength 20 Vm-1 and 0.5 T respectively at right**

**angles to the direction of motion of the electrons. Then the velocity of electrons must be?**

(a) 8m/s

(b) 20 m/s

(c) 40m/s

(d) 1/40 m/s

Ans:c

**91. A galvanometer of resistance 20 Ohms gives full scale deflection with a current of 0.004 A.**

**To convert it into an ammeter of range 1 A, the required shunt resistance should be?**

(a) 0.38 Ohms

(b) 0.21 Ohms

(c) 0.08 Ohms

(d) 0.05 Ohms

Ans:c

**92. A long solenoid carrying a current produces a magnetic field B along its axis. If the current is**

**doubled and the number of turns per cm is halved, the new value of the magnetic field is ?**

(a) 4B

(b) B/2

(c) B

(d) 2B

Ans:c

**93. A positively charged particle moving due east enters a region of uniform magnetic field**

**directed vertically upwards. The particle will**

(a) continue to move due east

(b) move in a circular orbit with its speed unchanged

(c) move in a circular orbit with its speed increased

(d) gets deflected vertically upwards.

Ans:b

**94. Two long parallel wires are at a distance of 1 metre. Both of them carry one ampere of**

**current The force of attraction per unit length between the two wires is?**

(a)2 x10-7 N/m

(b) 2 x10-8 N/m

(c) 5×10-8 N/m

(d)10-7 N/m

Ans:a

**95. A galvanometer having a resistance of 8 ohms is shunted by a wire of resistance 2 ohms. If**

**the total current is 1 amp, the part of it passing through the shunt will be?**

(a)0.25 amp

(b) 0.8 amp

(c)0.2 amp

(d) 0.5 amp

Ans:b

**96. A coil of one turn is made of a wire of certain length and then from the same length a coil of**

**two turns is made. If the same current is passed in both the cases, then the ratio of the magnetic**

**inductions at their centres will be?**

(a)2:1

(b)1:4

(c)4:1

(d)1:2

Ans:b

**97. Magnetic field intensity in the centre of coil of 50 turns, radius 0.5 m and carrying a current**

of 2A is ?

(a) 0.5 x 10-5 T

(b) 1.25x 10-4 T

(c) 3x 10-5 T

(c) 4 x 10-5 T

Ans:b

**98. When a proton is accelerated through I V, then its kinetic energy will be?**

(a)1840 eV

(b) 13.6eV

(c)1 eV

(d) 0.54eV

Ans:c

**99. If a long hollow copper pipe carries a current,thin magnetic field is produced**

(a)inside the pipe only

(b)outside the pipe only

(c)both inside and outside the pipe

(d) no where

Ans:b

**100. A charged particle moves through a magnetic field in a direction perpendicular to it. Then**

**the**

(a) velocity remains unchanged

(b) speed of the particle remains unchanged

(c) direction of the particle remains unchanged

(d) acceleration remains unchanged

Ans:b