NEET PHYSICS

Topic: Magnetism

Q.1 Along the direction of current carrying wire, the value of magnetic field is ?

(1) zero

(2) infinity

(3) depends on the length of the wire

(4) uncertain

Q.2 Value of 1 tesla in gauss is -

(1) 10^3 (2) 10^6 (3) 10^4 (4) 10^2

Q.3 The vector form of Biot-Savart law is -

(1) $d\vec{B} = \frac{kid\vec{\ell} \times \vec{r}}{r^2}$ (2) $d\vec{B} = \frac{kid\vec{\ell} \times \vec{r}}{r^3}$

(3) $d\vec{B} = \frac{kid\vec{\ell} \times \vec{r}}{r}$ (4) $d\vec{B} = \frac{kid\vec{\ell} \times \hat{r}}{r}$

Q.4 To obtain maximum intensity of magnetic field at a point the angle between position vector of point and small elements of length of the conductor is -

(1) 0 (2) $\pi/4$

(3) $\pi/2$ (4) π

Q.5 The value of intensity of magnetic field at a point due to a current carrying conductor is obtained from-

(1) Gauss's law (2) Faraday's law

(3) Coulomb's law (4) Biot Savart's law

Q.6 The value of intensity of magnetic field at a point due to a current carrying conductor depends -

(1)Only on the value of current

(2)Only on a small part of length of conductor

(3) On angle between the line joining the given point to the mid point of small length and the distance between the small length of the point

(4) On all and the above

Q.7 Which of the following statements is false for Helmholtz coils -

(1) In Helmholtz coils, both coils are coaxial

(2)The planes of Helmholtz coils are perpendicular to each other

(3) The distance between the coils is equal to the radius of the coil

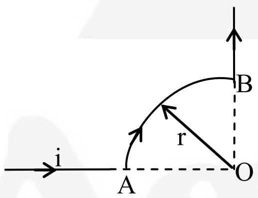
(4) The magnetic field produced in the middle region between the coils is uniform

Q.8 The diameter of a circular coil is 0.16m and it has 100 turns. If a current of 5 ampere is passed through the coil, then the intensity of magnetic field at a point on the axis at a distance 0.06 m from its centre will be -

(1) 2×10^{-3} Wb/m^2 (2) 2×10^{-2} Wb/m^2

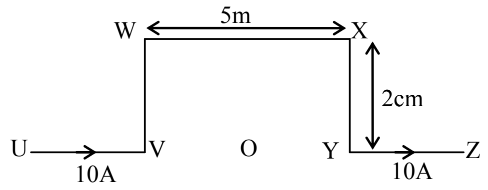
(3) 2×10^{3} Wb/m^2 (4) 2×10^{2} Wb/m^2

Q.9 The section AB in the following figure is a quarter of a circle of radius r. The magnitude and direction of magnetic induction at the centre O will be -



(1) $\frac{\mu_0 i}{2r}$ ⊙ (2) $\frac{\mu_0 i}{4r}$ ⊗ (3) $\frac{\mu_0 i}{8r}$ ⊙ (4) $\frac{\mu_0 i}{8r}$ ⊗

Q.10 The resulting magnetic field at the point O due to the current carrying wire shown in the figure-



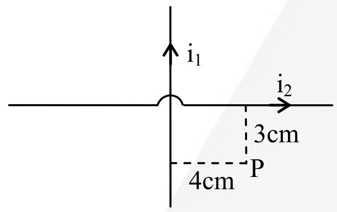
(1) points vertically upwards

(2) points vertically downwards

(3) is zero

(4) is the same as due to the segment WX alone

Q.11 Two insulated wires of infinite length are lying mutually at right angles to each other as shown in the figure. Current of 2A and 1.5A respectively are flowing in them. The value of magnetic induction at point P will be -



(1) 2×10^{-3} N/A-m

(2) 2×10^{-5} N/A-m

(3) 0

(4) 2×10^{-4} N/A-m

Q.12 A current of 10 A is flowing through a circular coil of diameter 1 cm. What is the magnetic induction at its centre ?

(1) $4\pi \times 10^{-4}$ Tesla (2) $2\pi \times 10^{-4}$ Tesla

(3) $4\pi \times 10^{-8}$ Tesla (4) $4\pi \times 10^{-6}$ Tesla

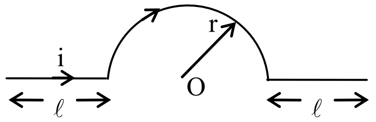
Q.13 The ratio of magnetic inductions at the centre of a circular coil of radius a and on its axis at a distance equal to its radius, will be -

(1) $\frac{1}{\sqrt{2}}$ (2) $\frac{\sqrt{2}}{1}$

(3) $\frac{1}{2\sqrt{2}}$ (4) $\frac{2\sqrt{2}}{1}$

Q.14 A current i is flowing in a conductor as shown in the figure.

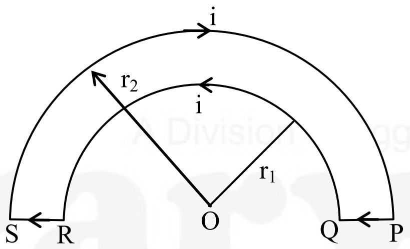
The magnetic induction at point O will be –



(1) 0 (2) $\frac{\mu_0 i}{r}$

(3) $\frac{2\mu_0 i}{r}$ (4) $\frac{\mu_0 i}{4r}$

Q.15 A wire loop PQRSP is constructed by joining two semicircular coils of radii r_1 and r_2 respectively as shown in the figure. Current is flowing in the loop. The magnetic induction at point O will be -



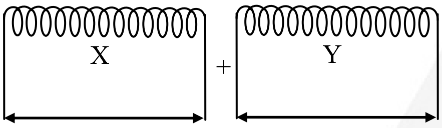
(1) $\frac{\mu_0 i}{4}\left[\frac{1}{r_1}-\frac{1}{r_2}\right]$ (2) $\frac{\mu_0 i}{4}\left[\frac{1}{r_1}+\frac{1}{r_2}\right]$

(3) $\frac{\mu_0 i}{2}\left[\frac{1}{r_1}-\frac{1}{r_2}\right]$ (4) $\frac{\mu_0 i}{2}\left[\frac{1}{r_1}+\frac{1}{r_2}\right]$

Q.16 The magnetic flux density at a point distant d from a long straight current carrying conductor is B. Then its value of at distance $\frac{d}{2}$ will be -

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

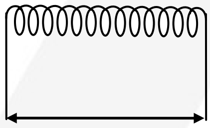
Q.17 In the given figure X and Y are two coils whose length and number of turns are same and each carry current I. The flux density at the centre, inside the coil is B and that at the end is B/2, when two coils are joined to make a coil of double the length and current I is passed through it then flux density at the centre will be-



N, ℓ N, ℓ

$n = \frac{N}{\ell}$ $n = \frac{N}{\ell}$

=



2N, 2ℓ

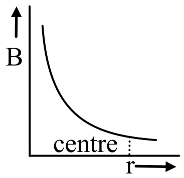
$n = \frac{2N}{2\ell}$

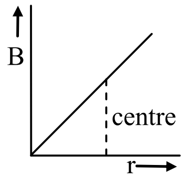
(1) zero (2) B/2 (3) B (4) 2B

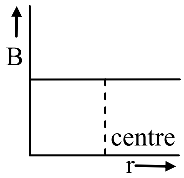
Q.18 At the centre of a straight solenoid the magnetic induction is B. If the length is reduced to half but to keep the number of turns same, these are wound in two layers, then the magnetic induction at the centre will be -

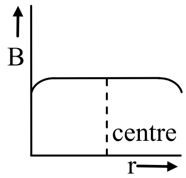
(1) B/2 (2) B (3) 2B (4) 4B

Q.19 In a solenoid the magnetic induction produced due to current (B) is a function of distance r from one end -

(1) 

(2) 

(3) 

(4) 

Q.20 The number of turns per unit length of a solenoid is 10. If its average radius is 5 cm and it carries a current of 10A, then the ratio of flux densities obtained at the centre and at the end on the axis will be -

(1) 1 : 2 (2) 2 : 1

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

Q.21 A solenoid of length 0.5 m and diameter 0.6m consists of 1000 turns of fine wire carrying a current of 5.0×10^{-3} ampere. The magnetic field in Weber/m^2 at the ends of the solenoid will be

(1) 8.71×10^{-6} (2) 6.28×10^{-6}

(3) 3.14×10^{-6} (4) 6.28×10^{-5}

Q.22 The average radius of a toroid made out of a nonmagnetic material is 0.1m and it has 500 turns. If it carries 0.5 ampere current, then the intensity of magnetic field along its circular axis in Tesla will be

(1) 5×10^{-4} (2) 5×10^{-3}

(3) 5×10^{-2} (4) 2×10^{-3}

Q.23 A hollow tube is carrying an electric current along the length distributed uniformly over its surface. The magnetic field -

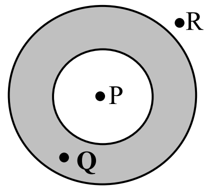
(1) increases linearly from the axis to the surface

(2) is non-zero inside the tube

(3) inside the tube is zero

(4) is zero just outside the tube

Q.24 Current is flowing through a conducting hollow pipe whose area of cross-section is shown as. The value of magnetic induction will be zero at-



(1) points P, Q and R

(2) Point R but not at P and Q

(3) Q but not at P and R

(4) P but not at Q and R

Q.25 At any internal point of a solenoid the value of magnetic field produced depends -

(1) only on current flowing in the solenoid

(2) only on length of the solenoid

(3) on number of the turns.

(4) on all of the above

Q.26 The magnetic field generated along the axis of a solenoid is proportional to -

(1) its length

(2) square of current flowing in its

(3) number of turns per unit length in it

(4) reciprocal of its radius

Q.27 When the number of turns in a toroidal coil is doubled, the value of magnetic flux density will become-

(1) four times (2) eight times

(3) half (4) double

Q.28 Total number of turns in a toroid is N and radius is R. If current i is passed through it, then the magnetic field inside the toroid will be-

(1) $\frac{\mu_0 Ni}{2R}$ (2) $\mu_0 Ni$

(3) $\frac{\mu_0 Ni}{2\pi R}$ (4) $\frac{\mu_0 Ni}{R}$

Q.29 An air core toroid with 10 turns/cm carries a current of 1 milliampere. The intensity of magnetic field inside it, in Weber/m^2 will be-

(1) $4\pi \times 10^{-6}$ (2) $4\pi \times 10^{-7}$

(3) $4\pi \times 10^{-8}$ (4) $4\pi \times 10^{-9}$

Q.30 Choose the wrong statement -

(1) The radius of path of a charged particle moving in a uniform magnetic field is proportional to the momentum of the particle

(2) An electron beam is moving towards east, on which a perpendicular magnetic field is acting upwards. The beam will be deflected towards the north direction

(3) A positive charge is going straight away from the observer. The magnetic line of force produced due to it are in clockwise direction.

(4) While passing through a given place, the path of electron remains straight line. It can be definitely said that the magnetic field is not present at that place

ANSWER KEY

Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	1	3	2	3	4	4	2	1	4	2
Que.	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans.	2	1	4	4	1	2	3	3	4	2
Que.	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
Ans.	2	1	3	4	4	3	4	3	2	4