SHAHEEN GROUP OF INSTITUTIONS
Bidar (Head Office)

Class : NEET Repeaters Sub: Physics Worksheet–15 Date: 05-02-2019

Magnetism – 1

1. A magnet of moment M is bent at its mid point so that angle between the two parts is 120^o, the magnetic moment of the magnet now is
   (A) M (B) $M\sqrt{3}$ (C) $\frac{M\sqrt{3}}{2}$ (D) $\frac{M}{2}$
2. Select the correct answer.
   a. When 'n' identical magnets are arranged in the form of closed polygon with unlike poles nearer, the resultant magnetic moment is zero.
   b. If one magnet is removed from the resultant magnetic moment becomes 'M'.
   c. If one magnet is reversed in the polygon, the resultant magnetic moment of combination becomes 2M.
   (A) a, b and c are correct (B) a and b are correct but c is wrong
   (C) only a is correct (D) a, b and c are wrong
3. When the north pole of magnet is kept vertically on a table, then
   (A) one null point on the south of the magnet is formed.
   (B) one null point on the north of the magnet is formed.
   (C) two null point on either sides North and South of the magnet are formed.
   (D) two null point on either sides East and West of the magnet are formed.
4. A long thin magnet of moment M is bent into a semi circle. The decrease in the Magnetic moment is
   (A) $2M/\pi$ (B) $\pi M/2$ (C) $M(\pi-2)/\pi$ (D) $M(2-\pi)/2$
5. A magnet of moment M, is cut into two equal parts. The two parts are placed perpendicular to each other so that their north poles touch each other. The resultant magnetic moment is
   (A) $M\sqrt{2}$ (B) $M/\sqrt{2}$ (C) $M\sqrt{3}$ (D) $M/\sqrt{3}$
6. At two corners A and B of an equilateral triangle ABC, a south and north pole each of strength 30Am are placed. If the side of the triangle is 1m. The magnetic induction at C is
   (A) 3×10^{-6} T (B) 4×10^{-6} T (C) 8×10^{-6} T (D) 2×10^{-6} T
7. A magnet of moment of $4Am^2$ is kept suspended in a magnetic field of induction 5×10^{-5} T. The workdone in rotating it through 180^o is
   (A) 4×10^{-4} J (B) 5×10^{-4} J (C) 2×10^{-4} J (D) 10^{-4} J
8. A short bar magnet placed with it axis at 30^o with a uniform external magnetic field of 0.16 T experience a torque of magnitude 0.032 Nm. If the bar magnet is free to rotate, its potential energies when it is in stable and unstable equilibrium are respectively
   (A) –0.064J, +0.064J (B) –0.032J, +0.032J
   (C) +0.064J, –0.128J (D) –0.032J, –0.032J

9. Two magnets of magnetic moments M and $\sqrt{3}$M are joined to form a cross+. The combination is suspended freely in a uniform magnetic field. In the equilibrium position, the angle between the magnetic moment $\sqrt{3}$M and the field is
(A) 30^o (B) 45^o (C) 60^o (D) 90^o

10. Two short bar magnets with magnetic moments $8Am^2$ and $27Am^2$ are placed 35cm apart along their common axial line with their like poles facing each other. The neutral point is
(A) midway between them (B) 21cm from weaker magnet
(C) 14cm from weaker magnet (D) 27cm from weaker magnet

11. A bar magnet of magnetic moment 1.2 Am^2 is placed in the magnetic meridian with its south pole pointing the north. If a neutral point is found at a distance of 20cm from the centre of the magnet, the value of the horizontal component of the earth's magnetic field is
(A) 3×10^{-5} T (B) 3×10^{-4} T (C) 3×10^{-3} T (D) 3×10^{-2} T

12. Two bar magnets are placed together in a vibration magnetometer vibrates with a time period of 3 second. If one magnet is reversed, the combination takes 4s for one vibration. The ratio of their magnetic moments is
(A) 3 : 1 (B) 5 : 18 (C) 18 : 5 (D) 25 : 7

13. A thin magnetic iron rod of length 30cm is suspended in a uniform magnetic field. Its time period is 4s. If it is broken into three equal parts the time period of oscillation of one part in seconds, when suspended in the same magnetic field is
(A) 4/3 (B) $2 / \sqrt{3}$ (C) $\sqrt{3}$ (D) $4 / \sqrt{3}$

14. A magnet is suspended in such a way that it oscillates in the horizontal plane. It makes 20 oscillations per minute at a place where dip angle is 30^o and 15 oscillations per minute at a placed where dip angle is 60^o. Ratio of the total earth's magnetic field at the two places is
(A) $3\sqrt{3} : 8$ (B) $16 : 9\sqrt{3}$ (C) 4 : 9 (D) $2\sqrt{3} : 9$

15. A bar magnet used in a vibration magnetometer is heated so as to reduce its magnetic moment by 19%. The periodic time of the magnetometer will
(A) increase by 19% (B) decrease by 19%
(C) increase by 11% (D) decrease by 11%

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1-C	2-A	3-A	4-C	5-B	6-A	7-A	8-A	9-A	10-C	11-A	12-D	13-A	14-B	15-C