1. A bar magnet has a magnetic moment 2.5 JT-1

and is placed in a magnetic field of 0.2 T.

Work done in turning the magnet from parallel to anti-parallel position relative to the field

direction is

(A) 0.5 J (B) 1 J

(C) 2.0 J (D) zero

2. In order to convert a miliammeter of range 1.0 mA and resistance 1.0 ohm into a voltmeter of

range 10 V, a resistance of how many ohms should be connected with it and in what

manner?

(A) 999 in series (B) 999 in series

(C) 9,999 in series (D) 9, 999 in parallel

3 A straight conductor of length 0.4 m is moved with a speed of 7 ms-1

perpendicular to a

magnetic field of induction 0.9 Wb/m2

. The induced e.m.f. across the conductor is

(A) 25.2 V (B) 5.04 V

(C) 2.52 V (D) 1.26 V

4. A particle is projected at an angle with the horizontal. If the horizontal range and maximum

height attained are equal then the angle is

(A) tan-1

2 (B) tan-14

(C) tan-13 (D) tan-12

5. In the circuit shown, what will be the readings of voltmeter and

ammeter?

(A) 800 V, 2amp (B) 220 V, 2.2 amp

(C) 300 V, 2 amp (D) 100 V, 2 amp

300VL C

220 V300V VA100 50 Hz

6. A charged oil drop is to be held stationary between two plates separated by a distance of 25 mm. If the mass of the drop is 5 10-15 kg and charge on it is 10-18 coulomb, the potential to be applied between the plates should be (A) 125 V (B) 1250 V

(C) 2500 V (D) 4450 V

47. The first line of Balmer series has wavelength 6563 A0

. What will be the wavelength of the

first member of Lyman series?

(A) 1215 A0

(B) 2500 A0

(C) 7500 A0

(D) 600 A0

8. A gamma ray photon creates an electron-positron pair. If the rest mass energy of an electron is 0.5 MeV and the total kinetic energy of the electron-positron pair is 0.78 MeV, then the energy of the gamma ray photon must be

(A) 0.78 MeV (B) 1.78 MeV

(C) 1.28 MeV (D) 0.28 MeV

9. In the nuclear reaction C B X,115116

; What does X stand for

(A) an electron (B) a proton

(C) a neutron (D) a neutrino

10. Energy released in the fission of a single 92U

235 nucleus is 200 MeV. The fission rate of a

92U

235 filled reactor operating at a power level of 5 W is

(A) 1.56 10-10 s-1

(B) 1.56 1011 s-1

(C) 1.56 10-16 s-1

(D) 1.56 10-17 s-1

1. Verdigris is:

(A) Basic copper acetate (B) Basic lead acetone

(C) Basic lead (D) None of these

2. In the extraction of copper , metal is formed in the Bessemer converter due to reaction:

(A) $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$ (B) $2Cu_2O \rightarrow 4Cu + O_2$

(C) $Cu_2S \rightarrow 2Cu + S$ (D) $Fe + Cu_2O \rightarrow 2Cu + FeO$

3 Gun metal is an alloy of :

(A) Cu and Al (B) Cu and Sn

(C) Zn and Sn (D) Cu, Zn and Sn

4. When $K_4[Fe(CN)_6]$ is added to $FeCl_3$, the complex compound formed is :

(A) $Fe_3[Fe(CN)_6]_4$ (B) $Fe_4[Fe(CN)_6]_3$

(C) $Fe_2[Fe(CN)_6]_4$ (D) $K_2Fe[Fe(CN)_6]$

45 Optical isomerism is not shown by the complex:

(A) $[Cr(ox)_3]^{3-}$

(B) $[Co(en)_2Cl_2]^+$(cis-form)

(C) $[Co(en)_2Cl_2]^+$(trans-form) (D) $[Cr(en)_3]^{3+}$

6. A magnetic moment of 1.73 BM will be shown by which one among the following compounds:

(A) $[Cu(NH_3)_4]^{2+}$ (B) $[Ni(CN)_4]^{2-}$

(C) $TiCl_4$ (D) $[CoCl_6]^{4-}$

7. Which of the following pairs of ions cannot be separated by H_2S in dilute HCl?

(A) Bi^{3+}, Sn^{4+} (B) Al^{3+}, Hg^{2+}(C) Cu^{2+}, Zn^{2+} (D) Ni^{2+}, Cu^{2+}

8. Manganese salt + PbO_2 + Conc. HNO_3 the solution acquires purple colour. The colour is due to:

(a) $Mn(NO_3)_2$ (B) $Pb(NO_3)_2$

(C) $HMnO_4$ (D) MnO

9. When a mixture containing phosphate is heated with conc. HNO_3 and ammonium molybdate

solution, a canary yellow precipitate is formed. The formula of the yellow precipitate is:

(A) (NH4)3PO4 (B) (NH4)3PO4.12MoO4

(C) (NH3)3PO4.12MoO3 (D) (NH4)3PO4.(NH4)2.MoO4

10. The compound formed in the borax bead test of Cu2+ ion in oxidizing flame is:

(A) Cu (B) CuBO2

(C) Cu(BO2)2 (D) None of these

1. The value of = c a a b cb c c a ba b b c a

is

(A) a3+ b3+ c3

(B) 3 abc

(C) a3+ b3+ c3– 3abc (D) none of these

2. If R, then = 1 sin 1sin 1 sin1 sin 1

lies in the interval

(A) [2, 3] (B) [2, 4]

(C) [-1, 2] (D) [0, 4]

3. If = x 3 x 4 x cx 2 x 3 x bx 1 x 2 x a= 0, then a, b, c are in

(A) A. P. (B) G. P.

(C) H. P. (D) none of these

4. The system of linear equations x + y –z = 6, x + 2y – 3z = 14 and

2x + 5y - z = 9 (R) has a unique solution if

(A) = 8 (B) 8

(C) = 7 (D) = 7

5. A square matrix A = [aij]n n is called a lower triangular matrix iff aij = 0 for

(A) i = j (B) i < j

(C) i > j (D) none of these

6. If A =a abab b22, then A is

(A) iodempotent (B) involuntary

(C) nilpotent (D) scalar

7. If a matric A = 2 11 2and B = 2 11 2

then AB is equal to

(A) 4 55 4

(B) 4 55 4

(C) 4 55 4

(D) None of these

8. If A, B and C be the three square matrices such that A = B + C, then det A is equal to

(A) det B + det C (B) det B

(C) det C (D) none of thes

9. If x,1 cos sin2sinthen 1 sin1 cos sin=

(A) x1

(B) x

(C) 1 – x (D) 1 + x

10. If sec + tan = 1, then one root of the equation a (b – c)x2

+ b(c – a)x + c(a – b) = 0 is

(A) tan (B) sec

(C) cos (D) sin