



11. In the reaction  ${}_1\text{H}^2 + {}_1\text{H}^3 \rightarrow {}_2\text{He}^4 + {}_0\text{n}^1$  if the B.E. of  ${}_1\text{H}^2, {}_1\text{H}^3$  and  ${}_2\text{He}^4$  are respectively A, B, C (in MeV), the energy released (in MeV) in this reaction is

- a)  $A+B+C$                       b)  $A+B-C$                       c) 0                      d)  $C-A-B$

12. In a common emitter transistor amplifier the audio signal voltage across the collector is 3 V. The resistance of collector is  $3\text{ k}\Omega$ . If current gain is 100 and the base resistance is  $2\text{ k}\Omega$ , the voltage and power gain of the amplifier is

- a) 200 and 1000                      b) 15 and 200                      c) 150 and 15000                      d) 20 and 2000

13. In semiconductor the mobilities of electrons and holes are  $\mu_e$  and  $\mu_h$  respectively. Which of the following is true?

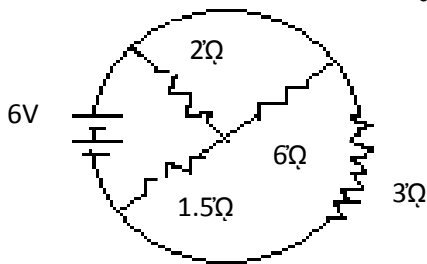
- a)  $\mu_e > \mu_h$                       b)  $\mu_e < \mu_h$                       c)  $\mu_e = \mu_h$                       d) none

14. A charge  $Q\ \mu\text{C}$  is placed at the centre of a cube of length  $L$ . The flux coming out from any surface will be

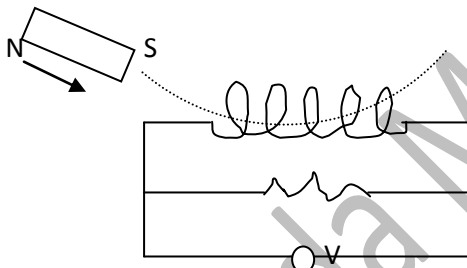
- a)  $Q/24\epsilon_0$                       b)  $Q/6\epsilon_0$                       c)  $(Q/6\epsilon_0) \times 10^{-6}$                       d)  $(Q/6\epsilon_0) \times 10^{-3}$

15. The total current supplied to the circuit by the battery is

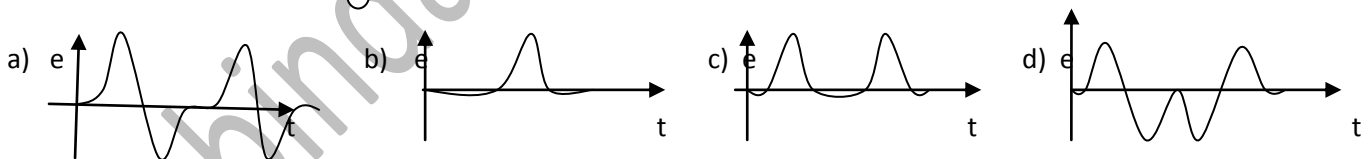
- a) 1A                      b) 2A                      c) 4A                      d) 6A



16. A magnet is made to oscillate with a particular frequency, passing through a coil as shown in figure



The time variation of the magnitude of e.m.f generated across the coil during one cycle is



17. The waves produced by a motor boat sailing in water are

- a) Transverse                      b) Longitudinal                      c) stationary                      d) Transverse & Longitudinal

18. The absolute zero is the temperature, at which

- a) water freezes                      b) molecular motion ceases                      c) all substances exist in solid state                      d) none

19. A sphere of mass  $M$  and radius  $R$  is falling in a viscous fluid. The terminal velocity will be proportional to

- a)  $R^2$                       b)  $1/R$                       c)  $1/R^2$                       d)  $R$

20. The energy which an electron acquires, when accelerated through a potential difference of 1V, is

- a) 1eV                      b)  $1.6 \times 10^{-19}$  Joule                      c) 1 Joule                      d) a and b both