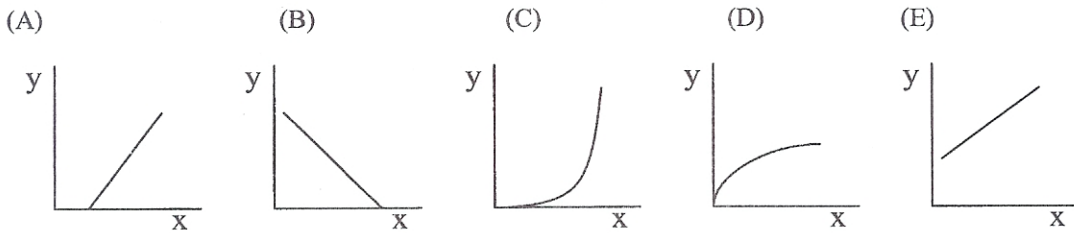


10. 在光電效應(photoelectric effect)的實驗中，入射光的頻率(x)與截止電壓(y)的關係為

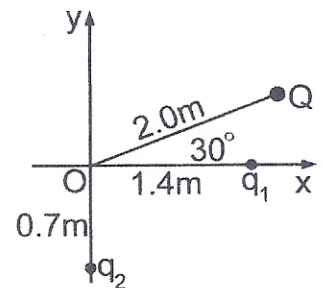


11. 一有限深位能井，在 $x=0$ 到 L 間，位能 $U=0$ ；在 $x<0$ ， $x>L$ ， $U=U_0$ 。一粒子置於該位能井中， $E<U_0$ ，且處於基態(ground state)。請問該粒子出現在哪一個位置的機率最高(A) $2L$ (B) 0 (C) $L/2$ (D) L (E) $-L$ 。

12. 某一固態物質具有體積膨脹係數(coefficient of volume expansion) β ，則線膨脹係數(coefficient of linear expansion) α 為：(A) $\beta^{1/3}$ (B) 3β (C) 0.25β (D) $\beta/3$ (E) $\exp(-\beta)$ 。

13. 雙原子分子(N_2 、 H_2)除具有三維的移動自由度外，也具有兩個轉動自由度。則定壓比熱與定體積比熱的比值 $\gamma (= C_p/C_v)$ 為(A) $7/5$ (B) $5/3$ (C) $7/3$ (D) $3/2$ (E) $5/2$ 。

14. A point charge $Q = -500 \text{ nC}$ and two unknown point charges, q_1 and q_2 , are placed as shown in right figure. The electric field at the origin O, due to charges Q , q_1 and q_2 is equal to zero. The charge q_1 , in nC, is closest to:



(A) 120. (B) -120. (C) -210. (D) 250. (E) 210.

15. When there is a net static charge present on an isolated perfect conductor

- (A) the charge will be uniformly distributed over the surface of the conductor.
- (B) the surface charge density will be greatest where the conductor is flat and smallest where there are sharp points.
- (C) the electric field inside the conductor needs not be zero if the conductor is hollow.
- (D) every point throughout the entire conductor will be at zero potential.
- (E) every point throughout the entire conductor will be at a constant potential, but not necessarily at zero potential.

16. If the length and diameter of a wire are both doubled, the resistance will be

- (A) increased fourfold. (B) unchanged. (C) halved. (D) doubled. (E) None of these are true.

17. If you were to cut a small permanent bar magnet in half,

- (A) each piece would be a smaller bar magnet.
- (B) neither piece would be magnetic.
- (C) one piece would be a magnetic north pole and the other piece would be a south pole.
- (D) each piece would be a small magnet, but the magnitudes of magnetic field of the north and south poles would not necessarily be equal on a magnet.
- (E) None of these statements is true.