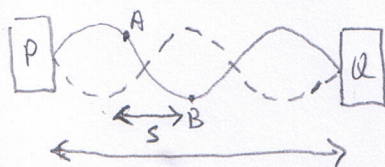


20) If two waves of the same frequency are superpose in phase, which of the following statement is correct?

Ans: c) The total energy carried is proportional to the square of the sum of the two amplitudes.

Q: intensity  $\propto$  total energy. what does total energy refer to?

21) A guitar string of length  $L$  is stretched between two fixed points P and Q and made to vibrate transversely as shown.



Two particles A and B on the string are separated by a distance  $s$ . The maximum kinetic energies of A and B are  $K_A$  and  $K_B$  respectively. which of the following gives the correct phase difference and maximum kinetic energies of the particles?

| Phase difference | Max kinetic energy |
|------------------|--------------------|
| Ans: $180^\circ$ | $K_A < K_B$        |

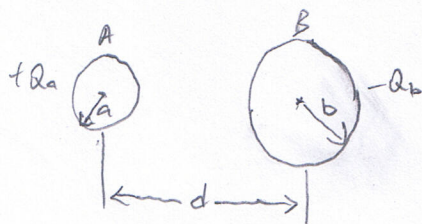
Q: Since max KE  $\propto$  (amplitude) $^2$ , can I say PE  $\propto$  (amplitude) $^2$  also?

22) Uniform electric field between two charged parallel plates:

$$E = \frac{V}{d}$$

Q: how to derive the equation?

23) A and B are two large conducting spheres of radii  $a$  and  $b$  and carrying charges  $+Q_a$  and  $-Q_b$  respectively. They are placed a short distance  $d$  apart.



which of the following statements about the electrostatic forces,  $F$ , between the spheres is true?

Ans: C)  $F > \frac{Q_a Q_b}{4\pi\epsilon_0 d^2}$

Q: why the force  $> \frac{Q_a Q_b}{4\pi\epsilon_0 d^2}$ , what is electrostatic forces?