

Which of the following approximations are made in treating a conjugated dye molecule as a particle in a box? (Mark all that are correct)

- a. The conjugated portion of the molecule is treated as a one-dimensional space in which the pi electrons are localized.
- b. The potential energy of the pi electrons is assumed to be constant at all points along the conjugated chain.
- c. The potential energy is assumed to be infinite near the ends of the conjugated chain.
- d. The potential energy of the pi electrons is treated as a sinusoidally-varying function with minima at each nucleus along the conjugated chain.
- e. The potential energy is assumed to undergo a parabolic increase as the ends of the conjugated chain are reached.