Unit 6 - Week 4

Assignment 4

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2020-10-14, 23:59 IST.

1) Which of the following statements is correct: When a molecule is vibrating in a normal mode then *2 points*

- all the atoms oscillate at the same frequency but some may remain stationary
- all atoms oscillate at different frequencies

No, the answer is incorrect.
Score: 0
Accepted Answers:
all the atoms oscillate at the same frequency but some may remain stationary

2) If the middle atom of a linear tri-atomic molecule is taken to be infinitely massive then in this limit both the longitudinal modes *2 points*

- have same frequency
- symmetric mode has higher frequency
- asymmetric mode has higher frequency

No, the answer is incorrect.
Score: 0
Accepted Answers:
have same frequency

3) Let ω_s represent frequency of the symmetric mode of a linear tri-atomic molecule in which all the atoms have equal mass (say m). If ω represents frequency of a diatomic molecule whose atoms have the same masses (m) as that of the above tri-atomic molecule then the ratio ω_s/ω is equal to *6 points*

Take all the spring contants to be equal.

- 1
- $\sqrt{2}$
- $1/\sqrt{2}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$1/\sqrt{2}$