ASSIGNMENT 6

The due date for submitting this assignment has passed. Due on 2019-03-13, 23:59 IST.
As per our records you have not submitted this assignment.

1) Consider CO$_3^-$ ion, depicted in the following figure. The three oxygen atoms are designated 1, 2 and 3. The C atom is designated 4.

![Figure of CO$_3^-$ ion](image)

Taking the $p_z$ orbitals the three oxygen atoms as the basis: $\left( \begin{array}{c} p_z^{(1)} \\ p_z^{(2)} \\ p_z^{(3)} \end{array} \right)$ the transformation matrix: $\begin{pmatrix} 0 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 1 \end{pmatrix}$

represents the symmetry operation:

- $C_3(z)$
- $C_2(y)$
- $s_{h} (xy)$
- $s_{v} (yz)$

No, the answer is incorrect.
Score: 0
Accepted Answers: $s_{v} (yz)$

2) Why are Laser sources ideal for excitation in experiments dealing with Raman Scattering? 1 point

- high intensity
- monochromaticity
- highly directional
- coherent

No, the answer is incorrect.
4) For a $D_{2h}$ molecule, consider the principal axis to be along $z$-direction. 1 point
Using the unit vectors along the three cartesian axes as basis., the resultant
symmetry operation for $s(xy)C_2^z(x)$ is

- $C_2(z)$
- $C_2(y)$
- $s(yz)$
- $s(zx)$

No, the answer is incorrect.
Score: 0
Accepted Answers:
s($zx$)

5) The cyclic group among the following is 1 point

- $C_3$
- $D_3$
- $C_{2v}$
- $D_{4h}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$C_3$

6) A group of order = 4 1 point

- is necessarily cyclic
- is necessarily acyclic
- can be either cyclic or acyclic
- is always commutative

No, the answer is incorrect.
Score: 0
Accepted Answers:
can be either cyclic or acyclic

7) The order of a group is $h$ and the order of one of its subgroups is $h'$ and $h'/h = p$ 1 point

- $p$ is a positive integer
- $1/p$ is a positive integer
- $p$ is necessarily an even number
p is necessarily an odd number

No, the answer is incorrect.
Score: 0

Accepted Answers:
1/p is a positive integer