Your Results for: "Multiple choice questions"

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Site Title: Chemistry, 4th Edition
Book Title: Chemistry, 4th Edition
Location on Site: Student Resources > Chapter 13: Electronic spectroscopy > Multiple choice questions
Date/Time Submitted: April 8, 2020 at 6:34 PM (UTC/GMT)

Summary of Results

56% Correct of 18 Scored items:
10 Correct: 56%
8 Incorrect: 44%

More information about scoring

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1. CORRECT

In which region of the electromagnetic spectrum does an absorption at 600 nm come?

Your Answer: Visible.

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2. INCORRECT

A solution of 0.001 mol dm^{-3} $NiSO_4$ is placed in an optical cell of pathlength 1 cm, and the absorption spectrum is recorded. The absorptions have characteristic λ_{max} and ε_{max} values. What are the correct units of ε_{max}?

Your Answer: cm dm^3 mol^{-1}
Correct Answer: dm^3 mol^{-1} cm^{-1}

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3. CORRECT

In which region of the electromagnetic spectrum does an absorption at 177 nm come?

Your Answer: Vacuum-UV.

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4. CORRECT

What does the notation $\sigma^* \leftarrow n$ mean?

Your Answer: Absorption; transition from a non-bonding MO to σ^* MO.

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5. INCORRECT

How do values of λ_{max} for the $\pi^* \leftarrow \pi$ transitions vary among a series of conjugated polyenes?

Your Answer: (blank)

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6. INCORRECT What is a *red shift*?

Your Answer: The shifting of an absorption to higher energy.
Correct Answer: The shifting of an absorption to lower energy.

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7. CORRECT What is a chromophore?

Your Answer: A group of atoms in a compound responsible for the absorption of electromagnetic radiation.

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8. CORRECT Which of the following is the principal chromophore in an azo-dye?

Your Answer: N=N

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9. INCORRECT Lycopene (λ_{max} = 469 nm) is present in tomatoes. What colour of light does lycopene absorb?

Your Answer: Red.
Correct Answer: Blue.

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10. CORRECT In which of the following are the π-electrons *not* delocalized?

Your Answer: Hepta-1,6-diene.

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11. INCORRECT All but one of the following groups can donate a lone pair of electrons into the carbon π-system of a conjugated polyene. Which is the odd one out?

Your Answer: SMe
Correct Answer: Me

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12. INCORRECT Which statement is *incorrect* about the allyl anion and buta-1,3-diene?

Your Answer: Both have four *n*-electrons.
Correct Answer: Both have four *n* MOs.

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13. CORRECT Which of the following arrangements of carbon-carbon double bonds along the backbone of a polyene does *not* correspond to a conjugated system?

Your Answer: –C=C–C–C=C–

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14. CORRECT An aqueous solution of a dye has a strong absorption with λ_{max}= 464 nm. The colour of the solution is:

Your Answer: orange.

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15. CORRECT Which of the following absorption maxima is *not* in the visible range of the electronic spectrum?

Your Answer: λ_{max} = 250 nm

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16. CORRECT Which of the following statements is consistent with an electronic absorption being broad?

Your Answer: An electronic absorption includes vibrational and rotational structure.

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17. INCORRECT Two solutions of the same compound were made up. Solution A was of concentration 0.98×10^{-4} mol dm^{-3}, and solution B was 1.66×10^{-2} mol dm^{-3}. The electronic spectrum of solution A contained one absorption at λ_{max} = 230 nm, while the

spectrum of solution B contained absorptions at λ_{max} = 230 and 365 nm. The difference in the spectra was because:

Your Answer: the value of λ_{max} depends on concentration.
Correct Answer: ε_{max} for the absorption at 365 nm is much smaller than ε_{max} of the band at 230 nm.

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18. INCORRECT

A compound **X** is characterized in its electronic spectrum by an absorption with λ_{max} = 217 nm (ε_{max} = 21 000 dm^3 mol^{-1} cm^{-1}). Of the compounds given below, **X** is most likely to be:

Your Answer: water.
Correct Answer: buta-1,3-diene.

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