

Unit 10 - Week 8

Assignment 8

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

Due on 2019-09-25, 23:59 IST.

1) A combination of S and L value is called 1 point

- A. a level
- B. a term
- C. a microstate
- D. a symbol

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

B.

2) For the copper(II) the free-ion term symbol is 1 point

- A. 5D
- B. 2D
- C. 2S
- D. 2P

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

B.

3) An abbreviated description of the angular momentum quantum numbers in a multielectron atom is given by 1 point

- A. Tanabe-Sugano diagram
- B. Jahn-Teller distortion
- C. Russel-Saunders term symbol
- D. Crystal field effect

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

C.

4) For $[V(H_2O)_6]^{3+}$ the lowest energy spin allowed transition is 1 point

- A. $^3T_{1g}(F) \longrightarrow ^3T_{2g}(F)$
- B. $^3T_{1g}(F) \longrightarrow ^3T_{1g}(P)$
- C. $^3T_{1g}(F) \longrightarrow ^3A_{2g}(F)$
- D. $^3T_{1g}(F) \longrightarrow ^3A_{1g}(F)$

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.

5) The ground states of high-spin octahedral and tetrahedral Co(II) complexes are, respectively 1 point

- A. $^4T_{2g}$ and 4A_2
- B. $^4T_{1g}$ and 4A_2
- C. $^3T_{1g}$ and 4A_2
- D. $^4T_{1g}$ and 3T_1

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

B.

6) Identify the correct order of energy of the term for d^2 configuration 1 point

- A. $^3F < ^3P < ^1G < ^1D < ^1S$
- B. $^3F < ^1G < ^1D < ^3P < ^1S$
- C. $^3F > ^3P > ^1G > ^1D > ^1S$
- D. $^3F < ^1G < ^1D < ^3P < ^1S$

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.

7) Three bands in the electronic spectrum of $[Cr(NH_3)_6]^{3+}$ are due to the following transitions (I) $^4A_{2g} \longrightarrow ^4T_{1g}$ (II) $^4A_{2g} \longrightarrow ^4T_{2g}$ (III) $^4A_{2g} \longrightarrow ^2E_g$ Identify the correct statement about them 1 point

- A. intensity of (I) is lowest
- B. intensity of (I), (II) and (III) are similar
- C. intensity of (III) is lowest
- D. intensity of (B) and (C) are similar

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

C.

8) In compound $Cs_2Au^I Au^{III} Cl_6$, intravalence CT occurs between 1 point

- A. $[Au^{III}Cl_5]^{2-}$ and $[Au^ICl]$
- B. $[Au^{III}Cl_4]^-$ and $[Au^ICl_2]^-$
- C. $[Au^{III}Cl_3]$ and $[Au^ICl_3]^{2-}$
- D. $[Au^{III}Cl_2]^+$ and $[Au^ICl_4]^{3-}$

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.

9) For octahedral $[Ni(NH_3)_6]^{2+}$, the bands are observed at 10700, 17500 and 28300 cm^{-1} . Calculate the D_q value of the complex. 1 point

- A. 750 cm^{-1}
- B. 2830 cm^{-1}
- C. 590 cm^{-1}
- D. 1070 cm^{-1}

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

D.

10) Tanabe-Sugano diagram gives information about 1 point

- A. only weak field complex
- B. only strong field complex
- C. both weak & strong field complex
- D. none of them

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.

11) The number of microstates in term 1G is 1 point

- A. 11
- B. 13
- C. 9
- D. 7

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

C.

12) The number of possible J values for 5D term symbol is 1 point

- A. 5
- B. 3
- C. 7
- D. 2

- A.
 B.
 C.
 D.

No, the answer is incorrect.

Score: 0

Accepted Answers:

A.

Course outline

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Lecture 25 : Tanabe Sugano Diagram

Lecture 26 : MLCT Transitions

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Assignment Solution