



## Unit 9 - Week 7

## Course outline

## How to access the portal

## Week 0 : Assignment 0

## Week 1

## Week 2

## Week 3

## Week 4

## Week 5

## Week 6

## Week 7

 Lecture 21 Optical Spectra

 Lecture 22 d-d Transitions

 Lecture 23 : Charge Transfer

 Quiz : Assignment 7

 Feedback for Week 7

## Week 8

## Week 9

## Week 10

## Week 11

## Week 12

## Download Videos

## Assignment Solution

## Assignment 7

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

Due on 2019-09-18, 23:59 IST.

1) Arrange the following complexes according to their increasing 10Dq values

1 point


 A.  $[\text{Cr}(\text{NH}_3)_6]^{3+} < [\text{CrCl}_6]^{3-} < [\text{Cr}(\text{CN})_6]^{3-}$ 

 B.  $[\text{CrCl}_6]^{3-} < [\text{Cr}(\text{NH}_3)_6]^{3+} < [\text{Cr}(\text{CN})_6]^{3-}$ 

 C.  $[\text{Cr}(\text{CN})_6]^{3-} < [\text{Cr}(\text{NH}_3)_6]^{3+} < [\text{CrCl}_6]^{3-}$ 

 D.  $[\text{CrCl}_6]^{3-} < [\text{Cr}(\text{CN})_6]^{3-} < [\text{Cr}(\text{NH}_3)_6]^{3+}$ 
 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

B

 2) If the energy gap ( $\Delta_o$ ) of an octahedral complex is  $3.48 \times 10^{-19}$  J, what will be the color of that complex? ( $h = 6.626 \times 10^{-34}$  J·s)

1 point

A. green

B. orange

C. violet

D. yellow

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

C

 3) The electronic spectrum of  $[\text{CoF}_6]^{3-}$  shows

1 point

A. 1 band

B. 2 bands

C. 3 bands

D. 4 bands

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

B

 4) The ambidentate ligand  $\text{SCN}^-$  can coordinate to a metal either through S or N, these linkage isomers can be distinguished by

1 point

A. UV-Vis spectra

B. IR spectra

C. Fluorescence spectra

D. Mössbauer spectra

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

B

 5) Which of the following octahedral complex of Ni has the highest magnitude of  $\Delta_o$ ?

1 point

 A.  $[\text{Ni}(\text{bipy})_3]^{2+}$ 

 B.  $[\text{Ni}(\text{NH}_3)_6]^{2+}$ 

 C.  $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$ 

 D.  $[\text{Ni}(\text{en})_3]^{2+}$ 
 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

A

 6) The transition observed in  $\text{CoCl}_4^{2-}$  complex is

1 point

A. Charge transfer

B. Laporte forbidden, spin allowed

C. Charge transfer, Laporte allowed, spin allowed

D. Laporte partly allowed, spin allowed

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

D

7) The solutions of fullerene oxides are intensely colored due to

1 point

 A. Transition between ( $\sigma$ ,  $\pi$ ,  $\sigma^*$ ,  $\pi^*$ ) electronic levels

B. Transition between d-d levels

C. Charge transfer transition

D. Capping of small transition metal ions

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

A

8) Which of the following is exceptional?

1 point

 A.  $\text{NCS}^-$ 

 B.  $\text{H}_2\text{O}$ 

 C.  $\text{CO}$ 

 D.  $\text{Br}^-$ 
 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

C

 9) The number of possible microstates for  $p^2$  configuration is

1 point

A. 20

B. 16

C. 9

D. 15

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

D

10) If a transition in a complex occurs in 493 nm region, then color of the complex would be

1 point

A. blue

B. green

C. red

D. yellow

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

C

11) In metal carbonyl complexes, the electron transfer takes place from

1 point

 A. ligand  $\pi$ -orbital to metal  $\pi^*$ -orbital

 B. metal d-orbital to ligand  $\pi^*$ -orbital

 C. ligand  $\sigma$ -orbital to metal  $\sigma^*$ -orbital

 D. metal d-orbital to ligand  $\sigma^*$ -orbital

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

B

 12)  $\text{Fe}(\text{bipy})(\text{CO})_3$  is intensely purple in color due to

1 point

A. MLCT transition

B. d-d transition

C. LLCT transition

D. LMCT transition

 A

 B

 C

 D

No, the answer is incorrect.

Score: 0

Accepted Answers:

A