

Unit 7 - Week 6

Course outline

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 Atomic Spectroscopy-III

 Atomic Spectroscopy-IV

 Atomic & Molecular Spectroscopy

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Assignment 6

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

Due on 2019-09-11, 23:59 IST.

Configurations	Terms
a. s^1s^1	i. 1^3D
b. s^1d^1	ii. 1^3S
c. p^1p^1	iii. $1^3F, 1^3P, 1^3D$
d. p^1d^1	iv. $1^3S, 1^3P, 1^3D$

- a. ii , b. i ,c. iv ,d. iii
 a. i , b. ii ,c. iv ,d. iii
 a. ii , b. iii, c. iv ,d. i
 a. iv , b. i ,c. iv ,d. iii

No, the answer is incorrect.
Score: 0
Accepted Answers:
a. ii , b. i ,c. iv ,d. iii

2) Emission spectrum of hydrogen and alkali metals show how many series in visible region:

- 1, more them 3
 1,1
 3,3
 2,3

No, the answer is incorrect.
Score: 0
Accepted Answers:
1, more them 3

3) Selection rule governing the excitation of electrons to the higher orbital and also its falling back from an excited orbital are:

- Δn is 0 , $\Delta l = \pm 1$
 Δn is unrestricted , $\Delta l = \pm 1$
 Δn is 0 , $\Delta l = \pm 1, 0$
 Δn is 0 , ± 1 , $\Delta l = \pm 1$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 Δn is unrestricted , $\Delta l = \pm 1$

4) When does principal series exist in spectra of alkaline metal:

- Transition from ns^2 to $ns^1 np^1$
 Transition from ns^2 to $ns^1 n+1s^1$
 Transition from np^2 to $n+1d^1 np^1$
 Transition from np^2 to $n+1s^1 np^1$

No, the answer is incorrect.
Score: 0
Accepted Answers:
Transition from ns^2 to $ns^1 np^1$

5) Which of the following is the principle of Atomic Absorption Spectroscopy?

- Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states
 Medium absorbs radiation and transmitted radiation is measured
 Color is measured
 Color is simply observed

No, the answer is incorrect.
Score: 0
Accepted Answers:
Radiation is absorbed by non-excited atoms in vapour state and are excited to higher states

6) In Atomic Absorption Spectroscopy, which of the following is the generally used radiation source?

- Tungsten Lamp
 Xenon mercury arc lamp
 Hydrogen or deuterium discharge lamp
 Hollow cathode lamp

No, the answer is incorrect.
Score: 0
Accepted Answers:
Hollow cathode lamp

7) For polyelectronic atoms which of the following transition(s) are allowed: (L = Total orbital angular momentum)

I. $\Delta L = 0$

II. $\Delta L = \pm 1$

III. $\Delta L = \pm 2$

- I only
 II only
 II and III
 I and II

No, the answer is incorrect.
Score: 0
Accepted Answers:
I and II

8) According to which selection rule of transition, $2p^1 3d^1$ transition is not allowed:

- ΔS selection rule
 Laporte selection rule
 ΔJ selection rule
 ΔL selection rule

No, the answer is incorrect.
Score: 0
Accepted Answers:
Laporte selection rule

9) For LCAO which statement is not true:

- The energies of the AOs must be comparable
 The AOs should overlap as much as possible
 AOs must have different symmetry property with respect to certain symmetry elements of the molecule
 AOs must have same symmetry property with respect to certain symmetry elements of the molecule

No, the answer is incorrect.
Score: 0
Accepted Answers:
AOs must have different symmetry property with respect to certain symmetry elements of the molecule

10) For N_2 molecule, the correct order of increasing energy of molecular orbitals:

- $\sigma_g 1s < \sigma_u^* 1s < \sigma_g 2s < \sigma_u^* 2s < \sigma_g 2p < \pi_u 2p < \pi_g^* 2p < \sigma_u^* 2p$
 $\sigma_g 1s < \sigma_u^* 1s < \sigma_g 2s < \sigma_u^* 2s < \pi_u 2p < \sigma_g 2p < \pi_g^* 2p < \sigma_u^* 2p$
 $\sigma_g 1s < \sigma_u^* 1s < \sigma_g 2s < \sigma_u^* 2s < \sigma_g 2p < \pi_g^* 2p < \pi_u 2p < \sigma_u^* 2p$
 $\sigma_g 1s < \sigma_u^* 1s < \sigma_g 2s < \sigma_u^* 2s < \pi_u 2p < \pi_g^* 2p < \sigma_g 2p < \sigma_u^* 2p$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $\sigma_g 1s < \sigma_u^* 1s < \sigma_g 2s < \sigma_u^* 2s < \pi_u 2p < \sigma_g 2p < \pi_g^* 2p < \sigma_u^* 2p$

11) Term symbol used to represent the electronic configuration in which all shells are closed:

- $1^1\Sigma_u$
 $3^1\Pi_g$
 $3^1\Sigma_u$
 $1^1\Sigma_g$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $1^1\Sigma_g$

12) Correct term symbol(s) for the first excited state of Li_2 is/are:

- $1^1\Sigma_g$
 $3^1\Pi_g$
 $3^1\Sigma_u$
 $1^1\Sigma_u$ and $3^1\Sigma_u$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $1^1\Sigma_u$ and $3^1\Sigma_u$

13) Spin-orbit coupling in hydrogen atom results into

- gross spectra
 fine spectra
 hyper-fine spectra
 None of these

No, the answer is incorrect.
Score: 0
Accepted Answers:
fine spectra

14) Total number of states for $p1d1$ configuration is

- 5
 6
 8
 10

No, the answer is incorrect.
Score: 0
Accepted Answers:
10

15) For d^2 configuration, the state with lowest energy is

- $3P$
 $1D$
 $3F$
 $1G$

No, the answer is incorrect.
Score: 0
Accepted Answers:
 $3F$

1 point

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