

**Birzeit University**

Chemistry Department

Chemistry 141

3rd hour Exam 2nd Sem. 2017/2018

Time: 60 minutes.

**Instructors:**

**Dr. Saleh Rayyan**

**Student Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Student No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Lecture No: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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*Chem141 3rd hour*

*Student name: ------------------------ student no: ------------------------- Section:---------------*

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|  | **A** | **B** | **C** | **D** |
| ***1*** |  |  |  |  |
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| **3** |  |  |  |  |
| **4** |  |  |  |  |
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**Please read the questions carfully and choose the best fit answer (1 point each):**

**1. Which of the following quantum number (q.n.) describe the orbital shape?**

A. *ml*, magnetic q.n. B. *ms*, spin q.n.

C. *n*, principal q.n. D. *l*, Angular momentum q.n.

**2. Which of the following quantum number combination represent the 5th electron in a nitrogen atom?**

A. *n* =3, *l* = 1, *ml* = -1 and *ms* = +1/2 B. *n* = 2, *l* = 0, *ml* = 0 and *ms* = +1/2

C. *n* =1, *l* = 0, *ml* = 1 and *ms* = -1/2 D. *n* = 2, *l* = 1, *ml* = -1 and *ms* = +1/2

**3. The correct electron configuration of 27Co+2 is**

A. 1s22s22p63s23p64s03d7 B.1s22s22p63s23p64s04d7

C. 1s22s22p63s23p64s23d5 D.1s22s22p63s23p64s24d5

**4. How many valence electrons does 27Co [Ar]** 4s23d7 **have?**

A. 9  B. 27

C. 2  D. 7

**5. Which of the following has the strongest paramagnetic property?**

A. Cr  B. Mn

C. Ti  D. V

**6. Which of the following compounds represent metallic bond?**

A. KCl B. CH4

C. AuCu  D. SF2

**7. Arrange fluorine, chlorine, carbon and silicon in order of increasing electronegativity.**

A. C < Si < F < Cl B. F < Cl < C < Si

C. Si < C < Cl < F D. C < Si < F < Cl

**8. Oxygen and hydrogen combine to form water. Calculate (in kJ) the standard enthalpy change ∆H° for the reaction written below, using the bond energies given.** Bond: OO H-H O-H

O2(*g*) + 2H2(*g*) 2H2O(*g*) Bond energy (kJ/mol): 498 432 467

A. -563 kJ B. -506 kJ

C. 231 kJ D. 704 kJ

**9. Arrange the following bonds in order of increasing bond length.**

A. C-Br < C-Cl < C-F < C-I B. C-Cl < C-S < C-P < C-Si

C. C-Si < C-P < C-S < C-Cl D. C-I < C-Br < C-F< C-Cl

**10. Select the most polar bond amongst the following.**

A. B-N B. B-F

C. B-C D. B-O

**11. How many lone pairs are on the central atom in a molecule of SCl6?**

A. 2 B. 3

C. 0 D. 1

**12. Acetylene (C2H2) is used in welding and cutting metals. The CC bond in the molecule C2H2 is best described as a:**

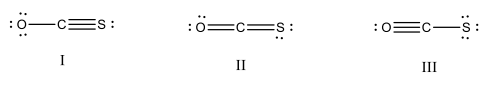
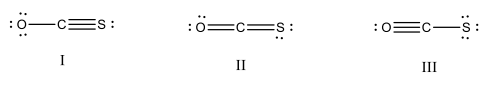
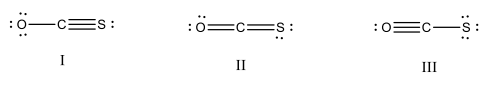
A. ionic bond B. triple bond

C. single bond D. double bond

**13. What are the formal charge (F.C.) and the oxidation number (O.N.) of carbon in CO3-2?**

A. F.C.= -2 and O.N. = +2  B. F.C.= +4 and O.N. = 0

C. F.C.= 0 and O.N. = +4 D. F.C.= +2 and O.N. = -2

**14. What is the most stable resonance form of SCO?**

A. Form I B. Form III

C. Form II D. I, II and III are equally stable.

**15. What is the molecular shape of PCl5?**

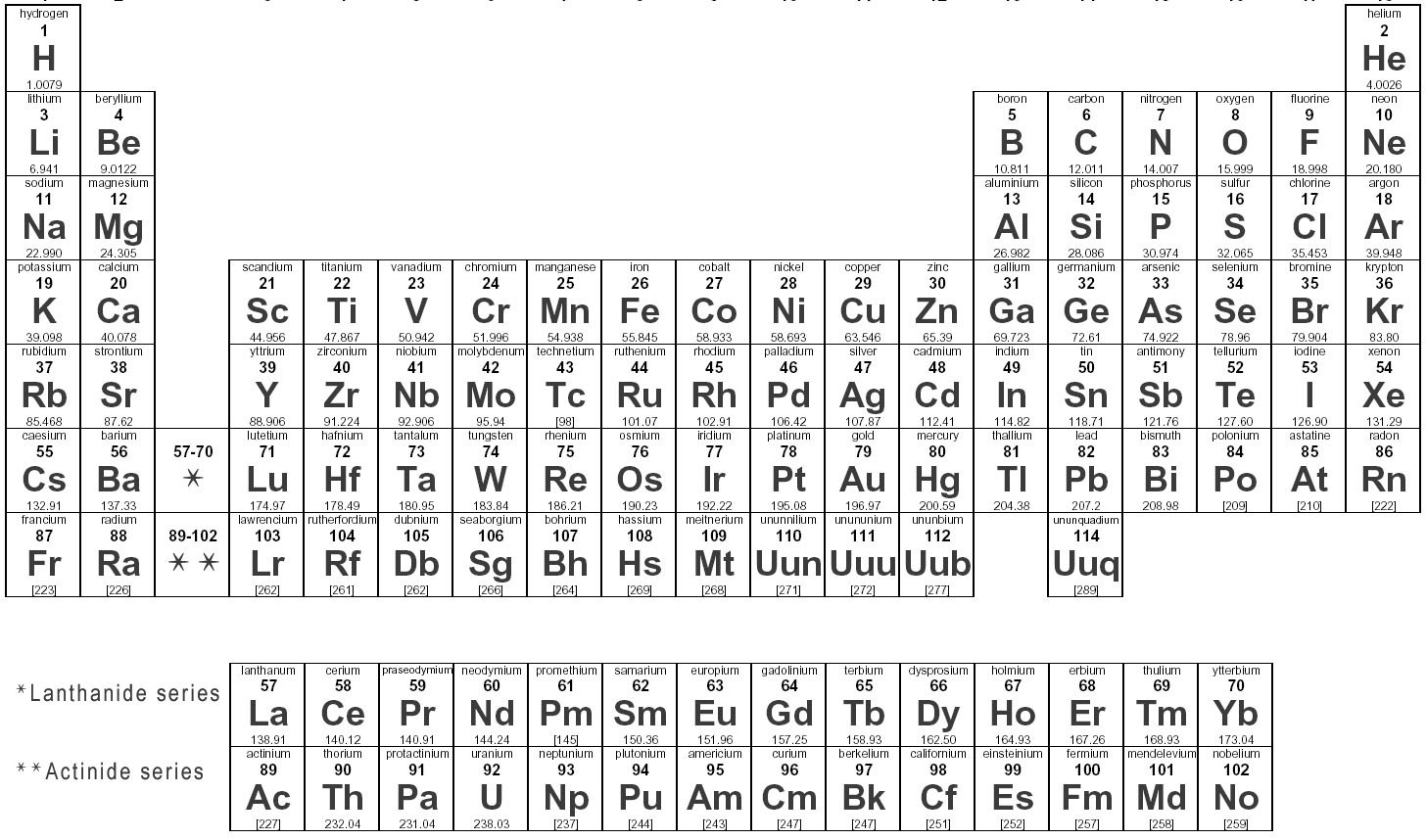
A. Trigonal bipyramidal B. Seesaw

C. Trigonal planer D. Tetrahedral

**16. Which of the following has a dipole moment?**

A. SCO-1 B. CH4

C. CO2 D. CS2

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