

Course No: PHRM 1204  
Course Title: Inorganic  
Pharmaceutical chemistry  
Date: 12/03/2017  
No. of Questions: (1)  
Time: 1 hour  
Using Calculator (No)

University of Palestine  
  
First Midterm Exam  
2016/2017  
Total Grade: 30 Marks

Instructor Name: Sharief Mezyed  
Student No.: \_\_\_\_\_  
Student Name: \_\_\_\_\_  
College Name: Pharmacy  
Dep. / Specialist: \_\_\_\_\_  
Using Dictionary (No)

**Question One: Define each the following terms .**

**3 Marks**

- A. Isotopes
  
  
- B. Bond polarity
  
  
- C. Hybrid orbitals

**Question Two: Answer the following questions as required: 13 Marks**

- A. Write the possible set of the four quantum numbers for the outermost electron of **gallium (Ga)** in its ground state.
  
  
  
  
  
  
  
  
  
  
- B. Choose the response includes all the molecules below that **do not** follow the octet rule?  
(1) H<sub>2</sub>S            (2) BCl<sub>3</sub>            (3) PH<sub>3</sub>            (4) SF<sub>4</sub>  
a. 1,4                b. 2,3                c. 3,4                a. 2,4
  
  
  
  
  
  
  
  
  
  
- C. Which one of the following molecules is nonpolar?  
a. H<sub>2</sub>O            b. CH<sub>2</sub>Cl<sub>2</sub>            c. SO<sub>3</sub>            d. NH<sub>3</sub>
  
  
  
  
  
  
  
  
  
  
- D. SCl<sub>2</sub> has a nonzero dipole moment, but BeCl<sub>2</sub> has a dipole moment of zero. How can you explain the difference?

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**Question Three: Answer the following questions as required:**

**14 marks**

- A. The  $F - Cl - F$  bond angles in  $ClF_3$  are approximately:
- a.  $90^\circ$  only                      b.  $120^\circ$  only                      c.  $180^\circ$  only                      d.  $90^\circ$  and  $180^\circ$
- B. Based on VSEPR and valence bond theories, what are the molecular geometry and hybridization of the central atom in  $PF_3$ ?
- C. Use the electron domain geometries of  $H_2O$ ,  $NH_3$  and  $CH_4$  to explain the effect of nonbonding electrons on bond angles. [Write two reasons for this effect]
- D. Which one of these two molecules can exist,  $AsCl_5$  or  $NCl_5$ ? Consider the concept of hybrid orbitals in your answer.

End of Questions  
*Good Luck*

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**Using Dictionary (No)**

IA											VIII A						
1 <b>H</b> 1.008	IIA															2 <b>He</b> 4.003	
3 <b>Li</b> 6.941	4 <b>Be</b> 9.012											5 <b>B</b> 10.81	6 <b>C</b> 12.01	7 <b>N</b> 14.01	8 <b>O</b> 15.99	9 <b>F</b> 19.00	10 <b>Ne</b> 20.18
11 <b>Na</b> 22.99	12 <b>Mg</b> 24.31	IIIB	IVB	VB	VIB	VII B	VIII B		IB	IIB	13 <b>Al</b> 26.98	14 <b>Si</b> 28.09	15 <b>P</b> 30.97	16 <b>S</b> 32.07	17 <b>Cl</b> 35.45	18 <b>Ar</b> 39.94	
19 <b>K</b> 39.10	20 <b>Ca</b> 40.08	21 <b>Sc</b> 44.96	22 <b>Ti</b> 47.88	23 <b>V</b> 50.94	24 <b>Cr</b> 52.00	25 <b>Mn</b> 54.94	26 <b>Fe</b> 55.85	27 <b>Co</b> 58.93	28 <b>Ni</b> 58.69	29 <b>Cu</b> 63.55	30 <b>Zn</b> 65.39	31 <b>Ga</b> 69.72	32 <b>Ge</b> 72.61	33 <b>As</b> 74.92	34 <b>Se</b> 78.96	35 <b>Br</b> 79.90	36 <b>Kr</b> 83.80
37 <b>Rb</b> 85.47	38 <b>Sr</b> 87.62	39 <b>Y</b> 88.91	40 <b>Zr</b> 91.22	41 <b>Nb</b> 92.91	42 <b>Mo</b> 95.94	43 <b>Tc</b> (98)	44 <b>Ru</b> 101.1	45 <b>Rh</b> 102.9	46 <b>Pd</b> 106.4	47 <b>Ag</b> 107.9	48 <b>Cd</b> 112.4	49 <b>In</b> 114.8	50 <b>Sn</b> 118.7	51 <b>Sb</b> 121.8	52 <b>Te</b> 127.6	53 <b>I</b> 126.9	54 <b>Xe</b> 131.3