

Course No: PHRM 1204
Course Title: Inorganic
Pharmaceutical chemistry
Date: 17/04/2017
No. of Questions: (2)
Time: 1 hour
Using Calculator (No)

University of Palestine



2nd Midterm Exam
2016/2017
Total Grade: 30 Marks

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

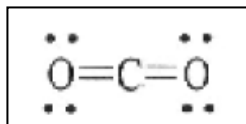
Question one- Choose the correct answer:

18 Marks

1- Which one of the following is an exothermic process?

- a) Melting
- b) Subliming
- c) Freezing
- d) Boiling
- e) none of the above

2- The Lewis structure of carbon dioxide is given below. The hybridization of the carbon atom in carbon dioxide is _____.



- a) sp^3
- b) sp^2
- c) sp
- d) sp^2d
- e) sp^2d^2

3- What kind of attractive forces must be overcome to sublime CO_2 ?

- a) dipole-dipole attraction
- b) London dispersion
- c) hydrogen bonding
- d) van der Waals forces
- e) all of these

4- When the pressure over a liquid is **decreased**, the boiling point of the liquid will

- a) decrease.
- b) increase.
- c) increase or decrease.
- d) remain the same.

5- What do the lines in a phase diagram represent?

- a) Three phases are in equilibrium.
- b) The distinction between two phases disappears.
- c) Two phases are in equilibrium.
- d) Only one phase is present.

6- Which hybrid orbital-type and molecular geometry are **incorrect**?

- a) sp^3d : trigonal bipyramidal
- b) sp^3 : tetrahedral
- c) sp^3d^2 : octahedral
- d) sp^2 : trigonal pyramidal
- e) sp : linear

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- 7- Give the bond order and number of unpaired electrons in C_2 and N_2^- .
- a) C_2 bond order 2, 0 unpaired electrons; N_2^- bond order 2.5, 0 unpaired electrons.
 - b) C_2 bond order 1, 2 unpaired electrons; N_2^- bond order 3.5, 1 unpaired electron
 - c) C_2 bond order 2, 2 unpaired electrons; N_2^- bond order 2.5, 1 unpaired electron
 - d) C_2 bond order 2, 1 unpaired electron; N_2^- bond order 2.5, 1 unpaired electron
 - e) C_2 bond order 2, 0 unpaired electrons; N_2^- bond order 2.5, 1 unpaired electron

8- Molecular Orbital theory correctly predicts paramagnetism of oxygen gas, O_2 . This is because _____.

- a) the bond order in O_2 can be shown to be equal to 2.
- b) there are more electrons in the bonding orbitals than in the antibonding orbitals.
- c) the energy of the π_{2p} MOs is higher than that of the σ_{2p} MO
- d) there are two unpaired electrons in the MO electron configuration of O_2
- e) the O=O bond distance is relatively short

9- Which of the following phase transitions gives off more heat?

- a) 1 mole of steam to 1 mole of water at $100^\circ C$,
- b) 1 mole of water to 1 mole of ice at $0^\circ C$.
- c) Both processes in a and b release the equal amounts of heat.
- d) Both processes in a and b are endothermic processes.

Question Two: Answer the following questions as required:

12 Marks

1- Use molecular orbital theory to compare the relative stabilities of F_2 and F_2^+ .

2- How would you distinguish between a sigma bond and a pi bond? [Write four differences at least]


3- Which substance in each of the following pairs would you expect to have the higher boiling point? Explain why.

(a) Ne or Xe

b) NH_3 or PH_3

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4 - Calculate the total amount of energy in KJ needed to melt 200 g of ice (at 0°C), and to raise the temperature to 125 °C.

Given: (Specific heat of liquid water is 4.184 J/g °C, specific heat of vapor water is 1.99 J/g °C, $\Delta H_{\text{fusion}}(\text{H}_2\text{O}) = 5.98 \text{ KJ/mol}$, and $\Delta H_{\text{vap}}(\text{H}_2\text{O}) = 40.8 \text{ KJ/mol}$,).

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

End of Questions
 Good Luck