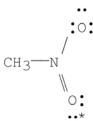
## MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

- 1) The atomic number of boron is 5. The correct electronic configuration of boron is \_\_\_\_\_. 1) \_\_\_\_\_
  - A) 2s2 2p3
  - B) 1s2 2s2 3s1
  - C) 1s2 2s2 2p1
  - D) 1s2 2s3
  - E) 1s2 2p3
- 2) What are the formal charges on nitrogen and the starred oxygen atom in the following molecule? 2) \_\_\_\_\_\_



- A) N = +1, O = 0
- B) N = -1, O = 0
- C) N = +1, O = +1
- D) N = +1, O = -1
- E) N = -1, O = -1
- 3) Choose the correct hybridization for the atom indicated in the molecule below.

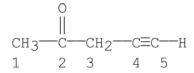
3) \_\_\_\_\_

#### CH3CH2CH2CH3

- A) sp2
- C) sp

- B) sp3
- D) none of the above
- 4) Which carbon(s) in the following molecule is (are) sp hybridized?

4) \_\_\_\_\_



- A) carbons 4
- B) carbon 1
- C) carbon 2
- D) carbons 4, 5
- E) carbons 1, 3

5)	Give t	he IUPA	C name	for the	following	structure

5)	

- A) 2-methyl-5-chlorocyclohexanol
- B) 1-chloro-4-methylcyclohexanol
- C) 5-chloro-2-methylcyclohexanol
- D) 3-chloro-6-methylcyclohexanol
- E) 2-methyl-3-chlorocyclohexanol

## 6) How many constitutional isomers are possible for C6H14?

6) \_\_\_\_\_

- A) 8
- B) 5
- C) 4
- D) 6
- E) 7

# 7) Name the compound.



- A) 5-cyclopentyl-3-methylheptane
- B) 5-cyclopentyl-3-methylhexane
- C) 1-cyclopentyl-1,3-dimethylpentane
- D) 2-cyclopentyl-4-methylhexane
- E) 2-cyclopentyl-4-methylheptane
- 8) Identify the compound with the highest pKa.

8) \_\_\_\_\_

- A) CH<sub>3</sub>OH
- B) CH<sub>3</sub>CH<sub>3</sub>
- C) HCCH
- D) CH<sub>2</sub>CH<sub>2</sub>
- E) CH<sub>3</sub>NH<sub>2</sub>

#### 9) Name the compound shown below.

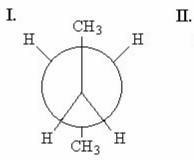


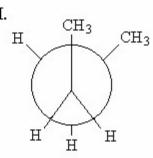


- A) trans-1,3-dichlorocyclohexane
- B) trans-1,2-dichlorocyclohexane
- C) cis-1,3-dichlorocyclohexane
- D) trans-1,4-dichlorocyclohexane
- E) cis-1,2-dichlorocyclohexane

10) Which of the following best explains the reason for the relative stabilities of the conformers shown?







- A) II has more torsional strain.
- C) I has more steric strain.

- B) I has more torsional strain.
- D) II has more steric strain.
- 11) Which of the following structures, including formal charges, is correct for diazomethane, CH2N2?
- 11) \_\_\_\_\_

- A):  $CH_2-N=N$ :
- B
- CH<sub>2</sub>—N≡N:
- C)
- +3 ••-3 CH<sub>2</sub>---N---N:
- 2)
- D) ⊕ ••€
- CH<sub>2</sub>=N=N:
- ⊖ ⊕ CH2=N=N:
- 12) Which of the following covalent bonds has the largest dipole moment?

- A) H-F
- B) H-N
- C) C-O
- D) C-H
- E) C-C

13) Which of the following describes the most stable conformation of *trans*-1-*tert*-butyl-3-methylcyclohexane?

13) \_\_\_\_\_

12) \_\_\_\_\_

- A) Both groups are axial.
- B) The *tert*-butyl group is equatorial and the methyl group is axial.
- C) Both groups are equatorial.
- D) The *tert*-butyl group is axial and the methyl group is equatorial.
- E) none of the above
- 14) Identify the hybridization of carbon in H<sub>2</sub>CO.

14) \_\_\_\_\_

- A) sp4
- B) sp2
- C) sp
- D) sp3
- E) s3p

15`	Provide the	IUPAC	name of	the	comr	oound

- A) N,N,2-trimethylpropanamine
- B) N,N,1,1-tetramethylethanamine
- C) N,N-dimethyl-2-butanamine
- D) N,N,2-trimethyl-2-propanamine
- E) N,N,2-trimethyl-1-propanamine

### 16) Name the compound.

- A) 4-ethyl-5-methylheptane
- B) 2-ethyl-3-propylpentane
- C) 4-ethyl-3-methylheptane
- D) 2,3-diethylhexane
- E) 4-methyl-3-ethylheptane

#### 17) Which of the compounds below have bonds that are predominantly ionic?

- A) NH3
- B) CF4
- C) KCl
- D) both A and B
- E) both B and C

# 18) What is the product formed from the following acid-base reaction when ammonia functions as a 18) \_\_\_\_\_ base? The equilibrium lies far to the reactants.

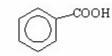
15) \_\_\_\_\_

16) \_\_\_\_

17) \_\_\_\_\_

- A) CH3NH2 + H2O
- B) CH3O-++NH4
- C) CH2OH + +NH3
- D) CH3OH2++-NH2
- E) CH4 + NH2OH

20) \_\_\_\_\_

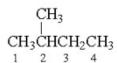


IV.

Π.

D) IV

20) Which of the following is the staggered conformation for rotation about the C1–C2 bond in the following structure?

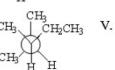




<sub>CH2CH3</sub> IV.



П.





Ш.



A) I

B) II

C) III

D) IV

E) V

## Answers Test Exam 1c

- 1) C
- 2) A
- 3) B
- 4) D
- 5) C
- 6) B
- 7) D
- 8) B
- 9) C
- 10) D
- 11) D
- 12) A
- 13) B
- 14) B
- 15) D
- 16) C
- 17) C
- 18) B
- 19) E
- 20) A