

CHEM 624 Fall 2012 Exam #2A (Blue)

October 4, 2012, 6:00 PM

Print Name _____
Last
First
MI

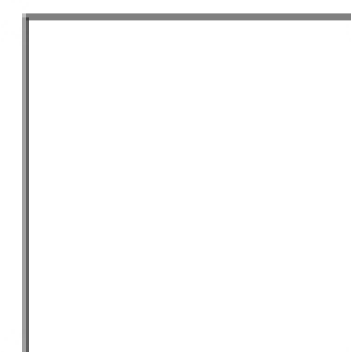
Page 7 (15 pts) _____

Signature _____
 (I will follow the honor code)

Page 8 (13 pts) _____

Page 9 (15 pts) _____

KUID _____



Total pages 7-9
(43 possible)

Periodic Table of the Elements

Legend:

- Solids
- Liquids
- Gases
- Artificially Prepared

Example: Iron (Fe)

Atomic Number: 26

Symbol: Fe

Name: Iron

Atomic Weight: 55.845

GROUP		PERIODIC TABLE OF THE ELEMENTS																GROUP									
IA																		VIII									
1	2																	10	11								
1	2																	10	11								
3	4																	5	6	7	8	9	10				
3	4																	5	6	7	8	9	10				
11	12											13	14	15	16	17	18										
11	12											13	14	15	16	17	18										
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36										
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36										
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54										
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54										
55	56											72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
55	56											72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	
87	88											104	105	106	107	108	109	110	111	112							
87	88											104	105	106	107	108	109	110	111	112							
		57	58	59	60	61	62	63	64	65	66	67	68	69	70	71											
		57	58	59	60	61	62	63	64	65	66	67	68	69	70	71											
		89	90	91	92	93	94	95	96	97	98	99	100	101	102	103											
		89	90	91	92	93	94	95	96	97	98	99	100	101	102	103											

****Note:** the last page of the exam is meant to be torn off and used as scratch paper

Table 6.2 Bond Dissociation Energies for Some Common Bonds [A–B → A• + •B]

Bond	ΔH° kJ/mol	Bond	ΔH° kJ/mol
H–Z bonds		R–X bonds	
H–F	569	CH ₃ –F	456
H–Cl	431	CH ₃ –Cl	351
H–Br	368	CH ₃ –Br	293
H–I	297	CH ₃ –I	234
H–OH	498	CH ₃ CH ₂ –F	448
<hr/>		CH ₃ CH ₂ –Cl	339
Z–Z bonds		CH ₃ CH ₂ –Br	285
H–H	435	CH ₃ CH ₂ –I	222
F–F	159	(CH ₃) ₂ CH–F	444
Cl–Cl	242	(CH ₃) ₂ CH–Cl	335
Br–Br	192	(CH ₃) ₂ CH–Br	285
I–I	151	(CH ₃) ₂ CH–I	222
HO–OH	213	(CH ₃) ₃ C–F	444
<hr/>		(CH ₃) ₃ C–Cl	331
R–H bonds		(CH ₃) ₃ C–Br	272
CH ₃ –H	435	(CH ₃) ₃ C–I	209
CH ₃ CH ₂ –H	410	<hr/>	
CH ₃ CH ₂ CH ₂ –H	410	R–OH bonds	
(CH ₃) ₂ CH–H	397	CH ₃ –OH	389
(CH ₃) ₃ C–H	381	CH ₃ CH ₂ –OH	393
CH ₂ =CH–H	435	CH ₃ CH ₂ CH ₂ –OH	385
HC≡C–H	523	(CH ₃) ₂ CH–OH	401
CH ₂ =CHCH ₂ –H	364	(CH ₃) ₃ C–OH	401
C ₆ H ₅ –H	460	<hr/>	
C ₆ H ₅ CH ₂ –H	356		
<hr/>			
R–R bonds			
CH ₃ –CH ₃	368		
CH ₃ –CH ₂ CH ₃	356		
CH ₃ –CH=CH ₂	385		
CH ₃ –C≡CH	489		

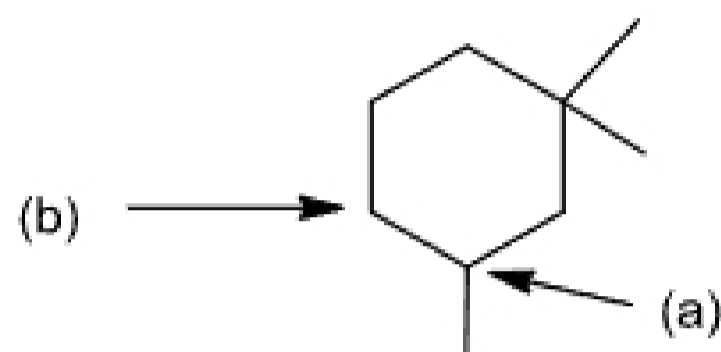
Enter your answers to Problems 1-19 on the SCANTRON SHEET

Multiple Choice (57 points total; 3 points each).

Questions 1-3 refer to the cycloalkane at right:

1. The **IUPAC name** for the compound:

- A. 1-methyl-3-isopropylcyclohexane
- B. 1-isopropyl-3-methylcyclohexane
- C. 1,3,3-trimethylcyclohexane
- D. 1,1,3-trimethylcyclohexane



2. The **carbon atom labeled (a)** is classified as:

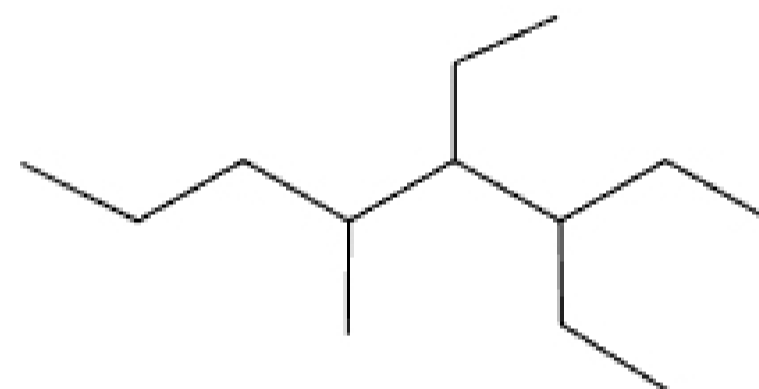
- A. 1°
- B. 2°
- C. 3°
- D. 4°

3. The hydrogen atoms attached to carbon (b) are classified as:

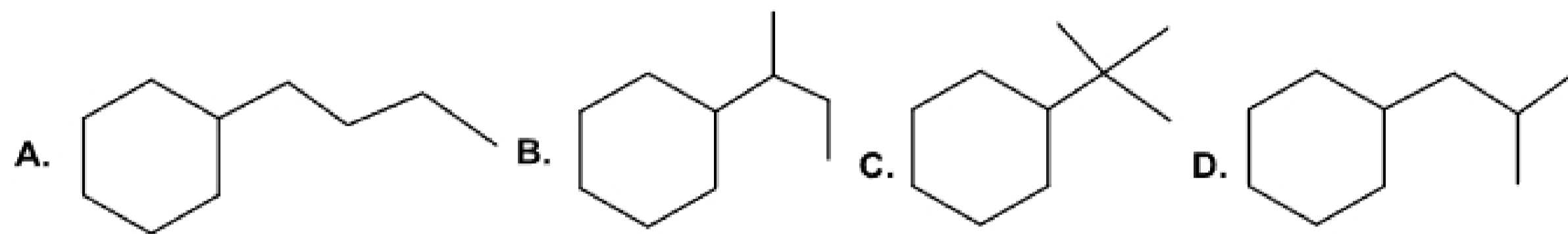
- A. 1°
- B. 2°
- C. 3°
- D. 4°

4. The **number of stereoisomers** for the molecule at right:

- A. 2
- B. 3
- C. 4
- D. 8



5. The structure of **sec-butylcyclohexane**



6. The **gauche conformation** of butane:

