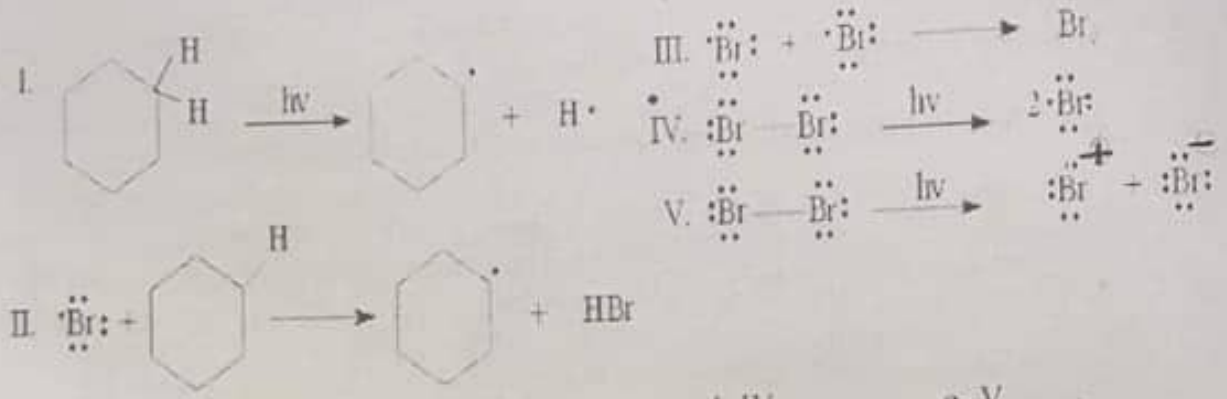
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
c	b	e	c	b	e	b	a	c	c	c	e	c	c	d	a	b	a	a	b

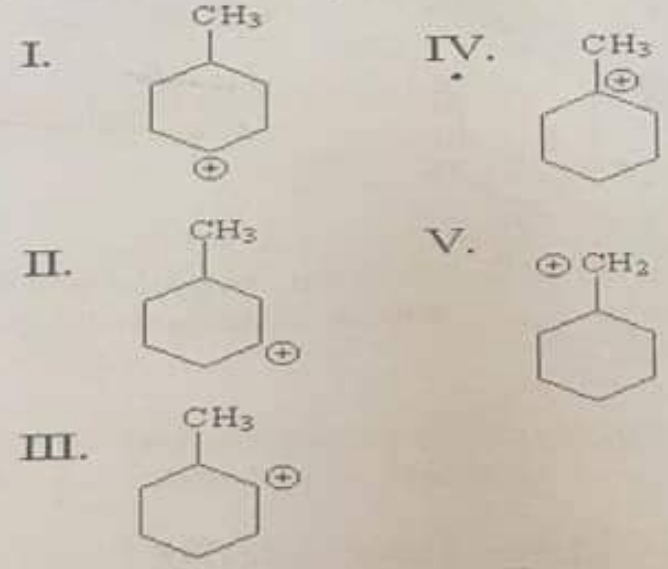
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
b	a	a	d	d	b	a	a	b	b	b	a	e	e	a	a	a	d	d	d

38- Which of the following is the initiation step for the monobromination of cyclohexane?



a- I b- II c- III d- IV e- V

39- Which of the following is the most stable carbocation?



a- I b- II c- III d- IV e- V

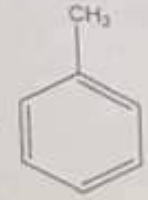
40- Which of the following reagents can be used to distinguish an alkene from an alkane?

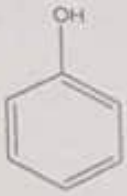
a- Zn, H^+ b- H_2O c- Cl_2, hv d- Br_2, CCl_4 e- O_2, heat

31- What is the name of the following molecule? $PhCH_2CH_2CH=CH_2$

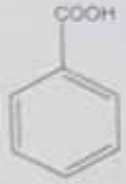
a- styrene
b- 4-phenyl-1-butene
c- 4-phenyl-3-butene
d- 3-benzyl-1-propene
e- allylbenzene

32- Which of the following structures accurately represents toluene?

a- 

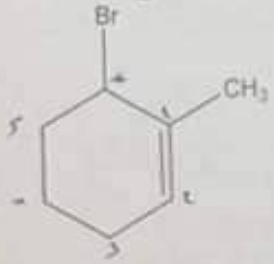
b- 

c- 

d- 

e- 

33- What is the IUPAC name for the following molecule?



a- 3-bromo-2-methylcyclohexene
b- 1-bromo-2-methyl-2-cyclohexene
c- 2-bromo-1-methyl-2-cyclohexene
d- 6-bromo-1-methyl cyclohexene
e- 6-bromo-1-methyl-1-cyclohexene

34- Which of the following is capable of exhibiting *cis-trans* isomerism?

a- 1-butene
b- 1-pentene
c- cyclohexene
d- ethene
e- 2-butene

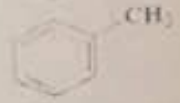
35- What is the formal charge on each atom in difluoromethane, CH_2F_2?

a. C = 0, H = 0, F = 0
b. C = 0, H = -1, F = +1
c. C = 0, H = +1, F = -1
d. C = -2, H = +1, F = +1
e. C = +4, H = -1, F = -1

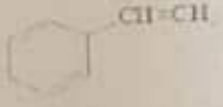
36- Which of the following is an aromatic hydrocarbon?

I. 

II. 

III. 

IV. 

V. 

a- I and III
b- IV and V
c- III
d- IV
e- V

37- Under what reaction conditions does the electrophilic chlorination of aromatic compounds usually occur?

a- Cl_2, $AlCl_3$
b- Cl_2, H_2O
c- Cl_2, CCl_4
d- NaCl, H_2O
e- NaCl, CH_3OH

24- What type of carbocation will form from the addition of a H^+ to 2-methylpropene?

a- CH_3^+ b- 1° c- 2° d- 3° e- allyl

25- Which one of the following hydrogens is the most acidic?

$$CH_3 - HC = CH - C \equiv C - H$$

a- 1 b- 3 c- 4 d- 5

26- What product(s) will be observed by the addition of one molar equivalent of Br_2 to 1,3-cyclohexadiene?

a- 1,2-dibromocyclohexene b- 3,4-dibromocyclohexene

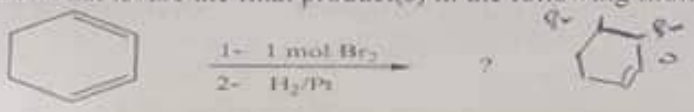
c- 1,3-dibromocyclohexene d- 3,6-dibromocyclohexene e- both b and d

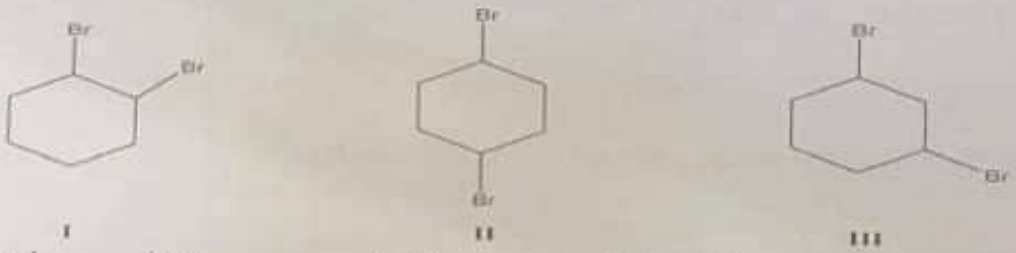
27- Upon ozonolysis which alkene will give only acetone. $(CH_3)_2C=O$

a- 2,3-dimethyl-2-butene b- 2,2-dimethyl-2-butene c- 3-hexene

d- 2-methyl-2-pentene e- 2-methyl-3-hexene

28-What is /are the final product(s) in the following multistep synthesis?





I II III

a- I b- II c- III d- I and II e- all are produced

29- Which of the following statements about resonance structures is true?

a- The placement of atoms is different.

b- The placement of π bonds is different.

c- The placement of σ bonds is different.

d- The placement of nonbonded electrons is the same

30- The product of the reaction

$$CH_3CH_2C \equiv CH \xrightarrow[liq\ NH_3]{NaNH_2} ?$$

is:

a- $CH_3CH_2C(Na)=CH_2$ b- $CH_3CH_2C \equiv C\,Na$ c- $CH_3CH_2C(NH_2)=CH_2$

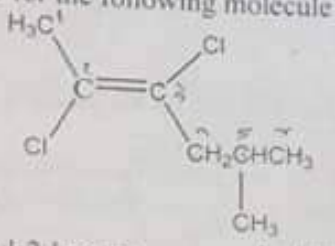
d- $CH_3CH_2C \equiv CHNH_2$ e- $CH_3CH_2C(Na)=CHNH_2$

17- Which of the following diene can be classified as conjugated?

a- $CH_3CH=C=CH_2$ b- $CH_2CH=CHCH=CH_2$ c- $CH_2=CHCH_2CH=CH_2$

d- $CH_3CH=CHCH_2CH_2CH=CH_2$ e- $CH_2=C=CH_2$

18- The correct IUPAC name for the following molecule is:



a- *trans*-2,3-dichloro-5-methyl-2-hexene b- *trans*-2,3-dichloro-5-methyl-3-hexene
c- *cis*-2,3-dichloro-5-methyl-3-hexene d- *trans*-4,5-dichloro-2-methyl-4-hexene
e- *cis*-4,5-dichloro-2-methyl-4-hexene

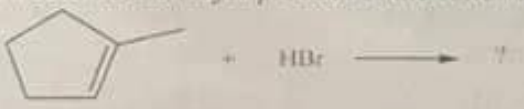
19- The correct structure for allyl bromide is :

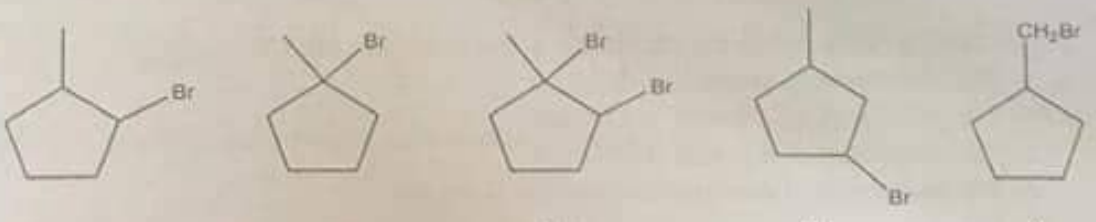
a- $CH_2=CHCH_2Br$ b- $CH_2=CHBr$ c- BrCH=CHBr
d- $BrCH=CHCH_3$ e- $CH_2=CHCHBr_2$

20- What type of compound is prepared by adding water to ethyne in the presence of sulfuric acid and mercuric sulfate?

a- aldehyde b- ketone c- carboxylic acid
d- ester f- ether

21- What would be the major product of the following reaction?

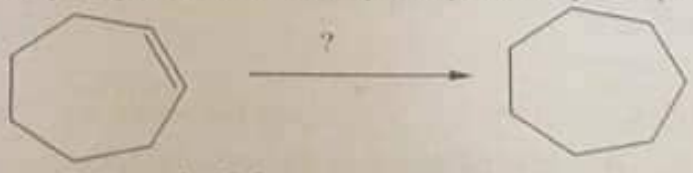




I II III IV V

a- I b- II c- III d- IV e- V

22- Select the necessary reagent(s) to convert cycloheptene to cycloheptane.

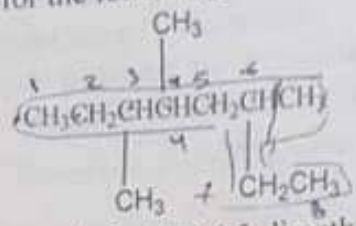


a- H_2 and Ni b- H_2O c- H_2SO_4 and heat
d- Zn and H+ e- KOH in alcohol and heat

23- Addition of H_2 to butyne in the presence of the lindlar's catalyst will produced:

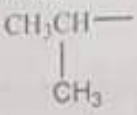
a- butane b- 1-butene c- *cis* -2-butene d- *trans*-2-butene e- isobutylene

9- The correct IUPAC name for the following molecule is :



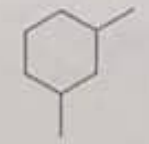
a- 6-ethyl-3,4-dimethylheptane b- 2-ethyl-4,5-dimethylheptane e- non of these
c- 3,4,6-trimethyloctane d- 3,5,6-trimethyloctane

10- The name of the alkyl group below is



a- ethyl b- propyl c- isopropyl d- butyl e- isobutyl

11- Identify the number of primary, secondary, and tertiary carbons, respectively, in the following molecule

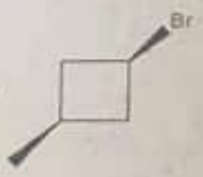


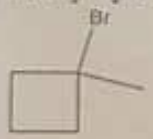
a- 1, 3, 1 b- 4, 1, 1 c- 2, 4, 2 d- 2, 2,

12- What is the correct name for the following molecule:

a- 2,2-dichlorocyclopropane b- 1,1- dichlorocyclopentane
c- 1,1-dichloropropane d- *trans*-1,1- dichlorocyclopropane
e- 1,1- dichlorocyclopropane

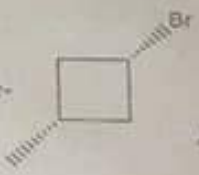
13- *Trans*-1-bromo-3-methylcyclobutane is represented by which structure below?

a- 

b- 

c- 

d- 

e- 

14- How many isomeric dichloro products can be obtained from the chlorination of cyclopropane (including geometrical isomers)?

a- 1 b- 2 c- 3 d- 4 e- 5

15- Which one of the following molecules has the highest boiling point?

a- $CH_3CH_2CH_3$ b- $CH_3CH_2COCH_3$ c- $CH_3CH_2CH_2OCH_3$ d- $CH_3CH_2CH_2OH$

16- What sequence correctly describes the steps involved in a radical chain reaction?

I) initiation II) termination III) propagation

a- I, III, II b- I,II,III c- III, I, II d- none of these

Mutah University
Chemistry Department
Organic Chemistry for Lab and Med Students (237)
First Exam /summer Semester 2018/2019

Name : _____ **Dr:**

1- The hybridization of each carbon atom in the molecule CH_3CH_2OH is :

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

2- The H-C-C bond angle in C_2H_4 is :

a- 180° b- 120 ° c- 109.5 ° d- 90 ° e- 60 °

3-Which of the following abbreviated structural formulas is NOT an isomer of the others?

a- b- c- d- e-

4- What is the hybridization of C3 below?

$CH_3CH{=}\overset{3}{C}{=}\overset{1}{C}H_2$

a- sp b- sp^3 c- sp^2 d- dsp^2 e- it is not hybridized

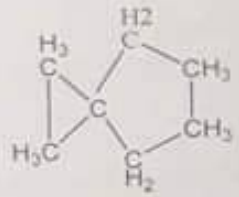
5- The number of possible acyclic hydrocarbons with the molecular formula C_4H_6 is :

a- 2 b- 3 c- 4 d- 5 e- 6

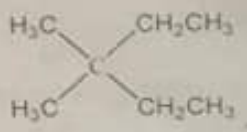
6- The structural formula for $(CH_3)_2C(CH_2CH_3)_2$ is :

a- $CH_3CH_2CCH_2CH_2CH_2CH_3$ b- $CH_3CH_2CH_3{=}{=}CH_3CH_2CH_3$ c- C_7H_{16}

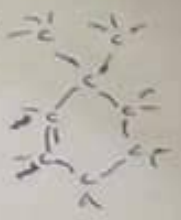
d-



e-



7-The structural formula



Has the molecular formula

a- C_8H_{10} b- C_8H_{14} c- C_8H_{16} d- C_8H_{18} e- C_8H_{20}

8- Which of the following structural formulas represent a structural isomer of

$CH_3CH_2CH_2CH_2CH_3$

a- $CH_3CH_2CH_2$ with CH_2CH_3 b- $CH_3CH_2CHCH_3$ with CH_2CH_3 c- $(CH_3)_2CHCH_3$

d- $CH_3CH_2CH(CH_3)_2$ e- $CH_3CH_2CH_3$ with CH_3