00001

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES

BACHELOR OF PHARMACY HONOURS- LEVEL 03 - 2018/19
BSU3341- PHARMACEUTICAL CHEMISTRY II
NBT 01

DATE: 02nd JULY 2019 | DURATION: ONE and HALF HOURS
TIME: 2.00 p.m. – 3.30 p.m.

REGISTRATION NO: .....

This question paper consists of 11 pages with 20 Multiple Choice Questions (Part A) and 04 Short Answer Questions (Part B).

IMPORTANT INSTRUCTIONS TO CANDIDATES

- Write your Registration Number in the space provided.
- Answer **ALL questions.**
- **Multiple Choice Questions (Part A):** Indicate answers in the answer sheet provided by placing a cross (X) in **INK** in the relevant cage.
- Answers in pencil will **NOT** be marked.
- **Short Answer Questions (Part B):** Write answers within the space provided.
- Do not remove any page/part of this question paper from the examination hall.
- Mobile phones and the electronic equipments are **NOT** allowed. Leave them outside.

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REGISTRATION NO: .....

ANSWER SHEET FOR PART A

Q. No.	(a)	(b)	(c)	(d)
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Part A – Multiple Choice Questions

(40 marks)

Choose the most suitable answer and indicate with a 'X' in the answer sheet provided.

1. Which type of bond will organic compound commonly form?

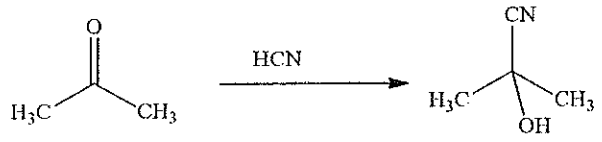
   a) Covalent
   b) Metallic
   c) Ionic
   d) None of these

2. Which of the following compound would be most soluble in water?
   a) Diethyl ether
   b) Methanol
   c) Hexane
   d) Acetylene

3. Of the following subatances, which one has the highest boiling point?
   a) Methane, CH_4
   b) Ethanol, CH_3CH_2OH
   c) Ethane, CH_3CH_3
   d) Ethanal, CH_3COH

4. Which of the following is **not** an unsaturated hydrocarbon?
   a) Alkenes
   b) Alkynes
   c) Alkanes
   d) Benzene

5. Consider the following reaction.



This reacton is a/an:

a) Nucleophilic addition reaction
b) Electrophilic addition reaction
c) Nucleophilic substituion reaction
d) Electrophilic substitution reaction

6. Among following carbocations, identify the carbocation with least stability.
   a) Tertiary
   b) Primary
   c) Secondary
   d) Methyl

7. Which of the following would be the most stable radical?
   a) $CH_3CH{=}CHCH_2CH_3$
   b) $CH_3CH{=}C\dot{H}CHCH_3$
   c) $CH_3CH{=}CHCH_2\dot{C}H_2$
   d) $\dot{C}H_2CH{=}CHCH_2CH_3$

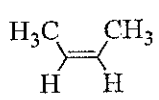
8. The order of reactivity of halogen towards halogenation of alkane is:
   a) $Cl_2 > Br_2 > F_2$
   b) $Cl_2 > F_2 > Br_2$
   c) $F_2 > Cl_2 > Br_2$
   d) $F_2 > Br_2 > Cl_2$

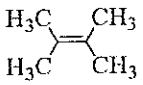
9. How many constitutional isomers are possible for C_5H_{12}?
   a) 1
   b) 2
   c) 3
   d) 5

10. Which one of the following statements is **incorrect** about the chlorination of CH_4?
    a) During the reaction, free radicals are formed.
    b) This is a chain reaction.
    c) Excess Cl_2 can yield a mixture of chlorinated products.
    d) Bonds break heterolytically and homolytically during the reaction.

11. Which of the following reaction types is characteristic of alkene?
    a) Nucleophilic addition
    b) Electrophilic addition
    c) Nucleophilic substituion
    d) Electrophilic substitution

12. Which of the alkenes below is *trans*-2-butene?


a)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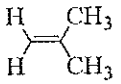
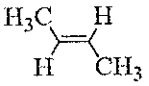
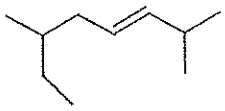

c)

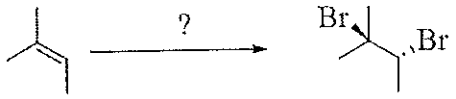

d)

13. IUPAC name of the following compound is



    a) 2,6-dimethyl-3-octene
    b) 6-ethyl-2-methyl-3-heptene
    c) 2-ethyl-6-methyl-4-heptene
    d) 3,7-dimethyl-5-octene

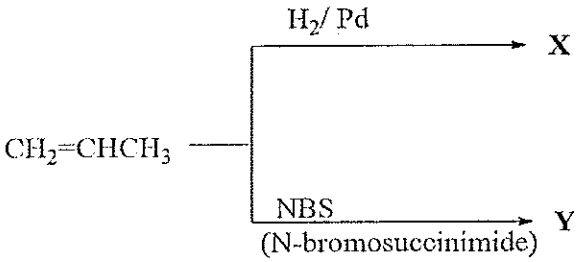
14. What is the best choice of reagent to perform the following reaction?



    a) Br_2, CH_2Cl_2
    b) HBr
    c) NBS (N-bromosuccinimide)
    d) HOBr

15. What type of reactive intermediate is formed in the reaction of an alkene with a hydrogen halide?
    a) Radical
    b) Bromonium ion
    c) Carbanion
    d) Carbocation

16. Identify the structures of the products **X** and **Y** respectively?



a) $CH_3CH_2CH_2Pd$ and $CH_2{=}CHCH_2Br$

b) $CH{=}CHCH_3$ and $CH_2BrCH_2CH_3$

c) $CH{=}CHCH_3$ and $CH_2{=}CHCH_2Br$

d) $CH_3CH_2CH_3$ and $CH_2{=}CHCH_2Br$

17. The hybridization of the central carbon atom in $CH_3C{\equiv}CH$ is

a) sp^2 b) sp c) sp^3 d) Correct answer is not given

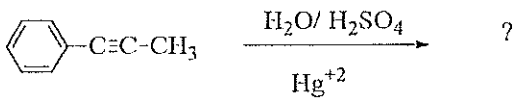
18. The correct IUPAC name for following alkyne is

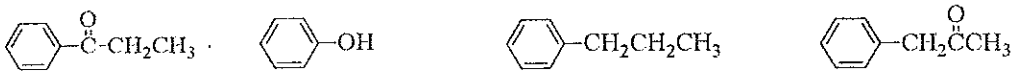
$CH{\equiv}CCH_2CH_2CH_3$

a) pent-4-yne
b) pentyne
c) 1-pentyne
d) 3-methylbut1-yne

19. Which of the following statement is **incorrect** regarding terminal alkynes?
a) They have a replacable acidic hydrogen atom
b) Terminal alkynes are more acidic than alkenes
c) Terminal alkynes are not as acidic as alkanes
d) 1-butyne is one of the terminal alkynes

20. Which is the structure of the product of the following reaction?





a) b) c) d)

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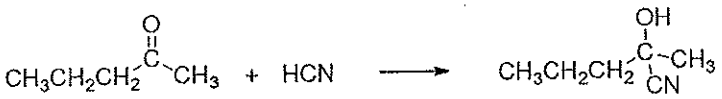
Part B –Short Answer Questions

(60 marks)

Write answers in the space provided.

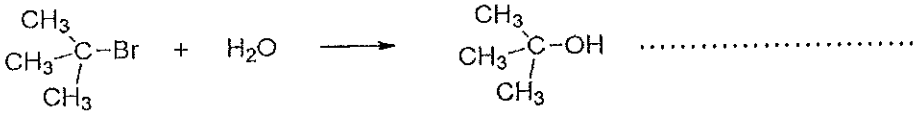
1. a). Identify the substrate and the reagent in following reactions. (04 marks)

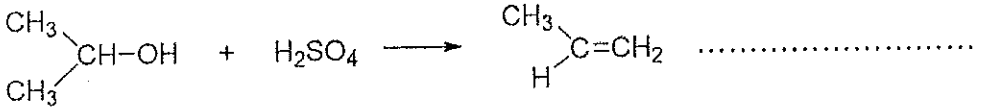
Substrate:.....Reagent:.....

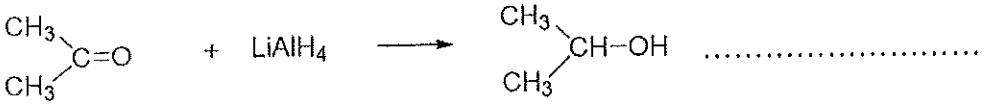


Substrate:.....Reagent:.....

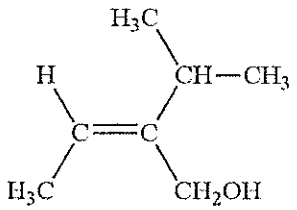
b). Classify the following reactions as substitution, elimination or addition.. (09 marks)

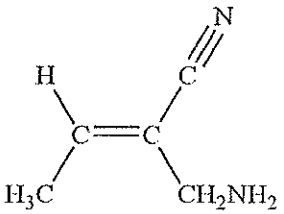


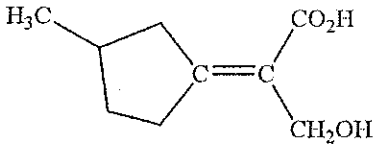




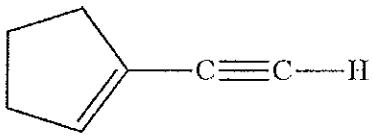
2. a). Determine the configuration (E or Z) of the double bond in each of the following compounds. (06 marks)



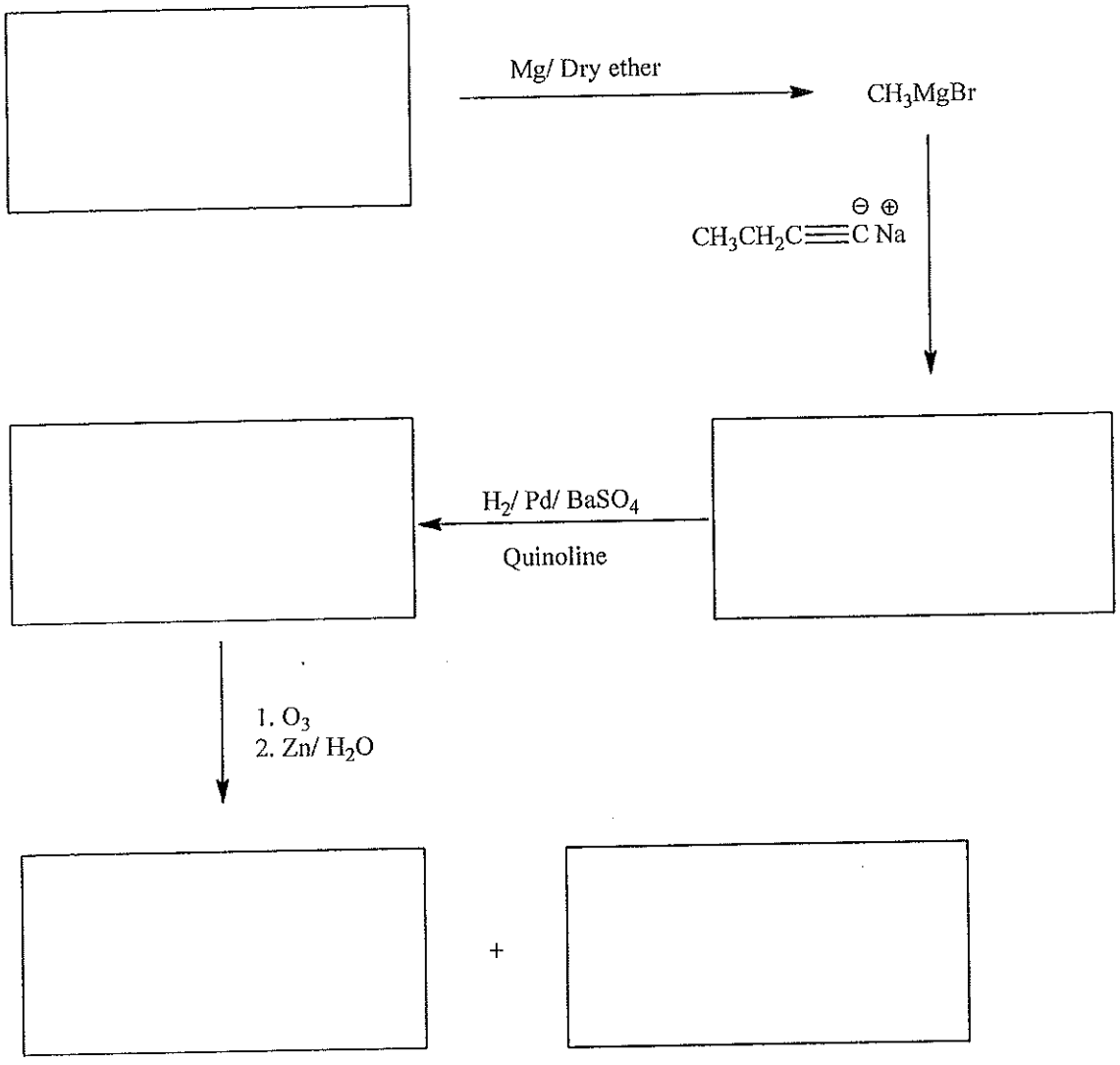




b). Indicate the hybridization of the orbitals on each carbon atoms of the following compound. (06 marks)



3. Write down the structures (in the given boxes) of the missing compounds of the following multistep conversion. (20 marks)



4. Giving the mechanism (draw arrows), predict the major product of the reaction between 3-Methyl-1-butene and HCl. (15 marks)

Reg No:.....

Name:.....

Address:.....

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