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**SUBJECT CODE NO:- B-2004**  
**FACULTY OF SCIENCE & TECHNOLOGY**  
**B.Sc. T.Y. (Sem-V)**  
**Examination November/December- 2022**  
**Chemistry Paper –XIV**  
**(Organic Chemistry)**

[Time: 1:30 Hours]

[Max. Marks: 50]

Please check whether you have got the right question paper.

N.B i) All questions are compulsory

Q. 1 (a) An organic compound having molecular formula  $C_8H_{10}O$ , gave the following PMR data. **10**  
 $\delta$ 2.20 (broad, s, 1H exchangeable with  $D_2O$ )  
 $\delta$ 2.70 (t, 2H),  $\delta$ 3.68 (t, 2H) and  $\delta$ 7.2 (s, 5H). Assign the structure of the compound.

(b) How will you synthesize the following compounds from acetoacetic ester **10**  
 1) Crotonic acid  
 2) 2-butanone  
 3) 2,4-pentanedione

OR

(a) How many set of equivalent protons present in the following compound. **10**  
 1) Toluene  
 2) Ethyl acetate  
 3) 1,1,2-tribromoethane  
 4) Ethanol  
 5) Acetaldehyde

(b) Explain the following terms **10**  
 1) Acid value  
 2) Cleaning action a detergents

Q. 2 (a) Starting from diethyl malonate how will you Prepare the following compounds **10**  
 1) Propanoic acid  
 2) Succinic acid  
 3) Barbituric acid

(b) How will you synthesize the following compounds form methyl magnesium iodide **10**  
 1) Iso-Propyl alcohol  
 2) Acetic acid  
 3) Methane thiol

OR

(a) Write a short note on (any four)

20

- 1) Position of signals
- 2) Shielding and deshielding
- 3) Reformatsky reaction
- 4) Acidity of  $\alpha$ -hydrogen atom in active methylene compound.
- 5) Synthesis of 4-methyl uracil from acetoacetic ester.
- 6) Saponification value

Q. 3 Choose the correct option for the following

10

1. Acetophenone molecule shows \_\_\_\_\_

- |                            |                           |
|----------------------------|---------------------------|
| a) One type of PMR peaks   | c) Two types of PMR peaks |
| b) Three type of PMR peaks | d) None of these          |

2. The distance between two adjacent peaks of multiplet is called as \_\_\_\_\_

- |                      |                           |
|----------------------|---------------------------|
| a) Coupling constant | c) Vander Waal's constant |
| b) Spin constant     | d) None of these          |

3. When external magnetic field is reinforces to the applied field this effect is known as \_\_\_\_\_

- |                     |                       |
|---------------------|-----------------------|
| a) Mesomeric effect | c) Inductive effect   |
| b) Shielding effect | d) Deshielding effect |

4. Chemical shift of aldehydic Proton is \_\_\_\_\_

- |                    |                    |                        |                     |
|--------------------|--------------------|------------------------|---------------------|
| a) $\delta$ 4 to 6 | b) $\delta$ 1 to 5 | c) $\delta$ 0.4 to 0.9 | d) $\delta$ 9 to 10 |
|--------------------|--------------------|------------------------|---------------------|

5. n-butyl lithium on reaction with bromobenzene gives \_\_\_\_\_

- |                     |                       |
|---------------------|-----------------------|
| a) n-butyl benzene  | c) 3- lithium benzene |
| b) 2- butyl benzene | d) Both 'A' and 'B'   |

6. Ethyl magnesium bromide on reaction with ethanol gives \_\_\_\_\_

- |                  |           |            |           |
|------------------|-----------|------------|-----------|
| a) Diethyl ether | b) Ethane | c) Butanol | d) Butane |
|------------------|-----------|------------|-----------|

7. Ethyl acetoacetate behaves as a \_\_\_\_\_

- |                     |                     |
|---------------------|---------------------|
| a) Ketone and amine | c) Ketone and enol  |
| b) Ketone and acid  | d) Ketone and ester |

8. Base catalyzed reaction of diethyl malonate with acetaldehyde gives \_\_\_\_\_
- a) Pentanoic acid      b) Adipic acid      c) Glutaric acid      d) Crotonic acid
9. Iodine value of an oil is determined by \_\_\_\_\_
- a) Wij's method      b) Zings method      c) King's method      d) Both 'b' and 'c'
10. Lavender oil is an example of \_\_\_\_\_
- a) Mineral oil      b) Edible oil      c) Vegetable oil      d) Essential oil