This question paper contains **5** printed pages]

BR—175—2016

FACULTY OF SCIENCE

M.Sc. (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2016

(CBCS Course)

ORGANIC CHEMISTRY

Paper CH-542/2

(Bio-organic and Green Chemistry)

(Saturday, 19-11-2016) **Time : 2.00 p.m. to 5.00 p.m.**

Time—Three Hours *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Multiple choice questions (MCQ) should be attempted only once on page No. **3** of answer-book with complete answer.

1. Solve any *three* of the following : 15

(*a*) Discuss structure of RNA.

(*b*) Give the classification of enzymes.

(*c*) Atom economy of rearrengement reaction is 100%. Explain.

(*d*) Use of TMBA in PTC.

(*e*) Microwave effects according to reaction medium.

P.T.O.

2. Answer the following (any *three*) : 15

(*a*) Explain the following as a green catalyst :

(*i*) Basic catalyst

(*ii*) Oxidation catalyst.

(*b*) Explain the use of ultrasound in the following reactions :

(*i*) Substitution reaction

(*ii*) Oxidation reaction.

(*c*) Discuss the synthesis of nucleoside.

(*d*) Explain production of penicillin using micro-organism.

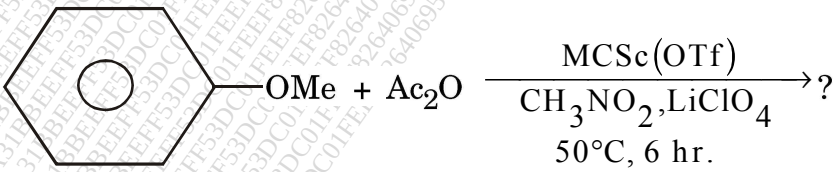
(*e*) What is solvent free reaction ? Explain solid mineral support.

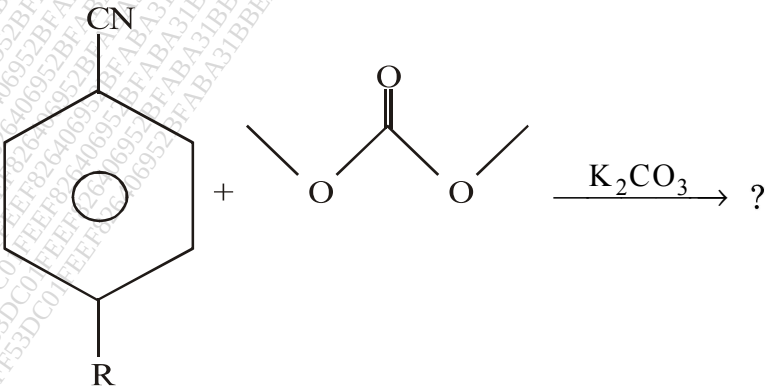
3. (*a*) Discuss the twelve principles of Green Chemistry in detail. 7

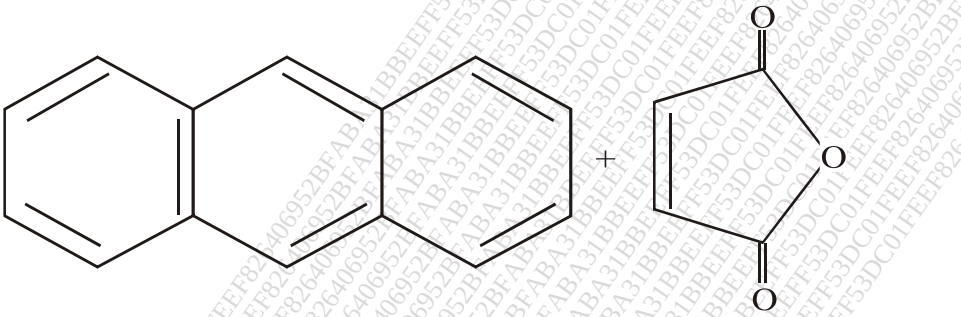
Or

Explain Michaelis-Menten equation.

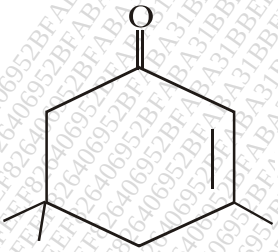
(*b*) Predict the products (any *four*) : 8

(*i*) 

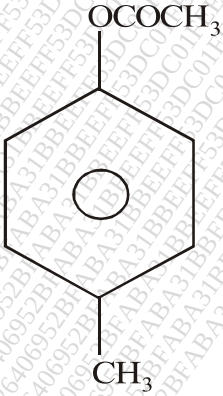
(*ii*) 

(*iii*) 

$$\xrightarrow[\text{Mw/90 sec.}]{\text{Diglyme}} \ ?$$

(*iv*) 

$$\xrightarrow[\text{R.T. 2.5 hr. >>>}]{\text{Zn—NiCl}_2\,(9:1)/\text{EtOH.H}_2\text{O}\,(1:1)} \ ?$$

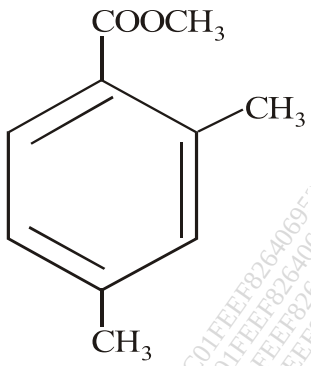
(*v*) 

$$+ \ AlCl_3 \xrightarrow[\text{Mw/2 min.}]{\text{Chlorobenzene}} \ ?$$

(*vi*) $C_6H_5CH(OAc)_2 \xrightarrow[\text{Mw/40 sec.}]{\text{Neutral alumina}} \ ?$

P.T.O.

(*vii*)



$$\xrightarrow[>>>,\ 60\ \text{min.}]{OH^-/H_2O} ?$$

4. (*a*) Explain induced fit mechanism of enzyme action. 7

Or

Why is the need of Green Chemistry ? How is it superior than traditional method.

(*b*) Explain microwave assisted reactions in water and in organic solvent. 8

Or

Explain biochemical oxidation and biochemical reduction in detail.

5. (A) Select the *correct* answer from the following multiple choice questions : 5

(*i*) ..... is purine base.

(*a*) Cytosine (*b*) Guanine

(*c*) Thiamine (*d*) Uracil

(*ii*) Ultrasound frequencies of intrest for chemical reaction ranges ..... .

(*a*) 100-200 kHz (*b*) 20-100 kHz

(*c*) above 200 kHz (*d*) None of these

(*iii*) Concept of Atom Economy was developed by :

(*a*) Bary Trost (*b*) Joseph D. Simon

(*c*) Trimotry Remark (*d*) None of these

(*iv*) ..... is used as PTC in Darzen reaction.

(*a*) Benzyl trimethyl anmonium chloride

(*b*) Benzyl triethyl anmonium chloride

(*c*) Benzyl trimethyl anmonium iodide

(*d*) None of the above

(*v*) MgO is ..... type catalyst in green protocol.

(*a*) Basic (*b*) Natural

(*c*) Acidic (*d*) None of these

(B) Write short notes on any *two* : 10

(*a*) Three point attachment rule

(*b*) Factors affecting enzyme catalysed reaction

(*c*) Types of ionic liquid.