

This question paper contains 4 printed pages]

**AY—115—2018**

**FACULTY OF SCIENCE**

**M.Sc. (Fourth Semester) EXAMINATION**

**MARCH/APRIL, 2018**

**(CBCS Pattern)**

**ORGANIC CHEMISTRY**

**CH-542/2**

**(Bio-organic and Green Chemistry)**

**(Thursday, 12-4-2018)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

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

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

*(iii) Multiple Choice Questions (MCQs) should be attempted only once on Page No. 3 of answer-book with complete answers.*

1. Solve any *three* : 15

(a) Role of PTC in Darzen reaction.

(b) Structure and properties of *m*-RNA and *t*-RNA.

(c) Factors affecting enzyme catalysed reaction.

(d) Atom economy in various reactions.

(e) Use of polymer supported chromic acid as a green reagent.

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

(i) Structure and physical properties of Nitrogen bases.

(ii) Classification and nomenclature of enzymes.

(iii) Explain the following as green catalyst :

(a) Oxidation catalyst

(b) Polymer support catalyst.

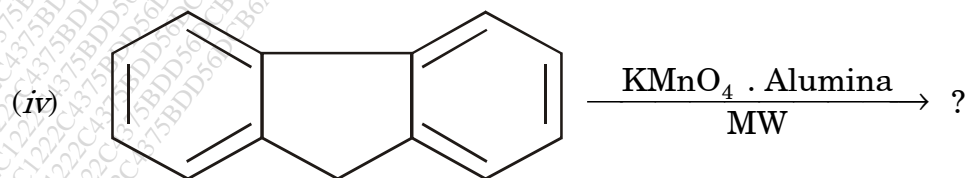
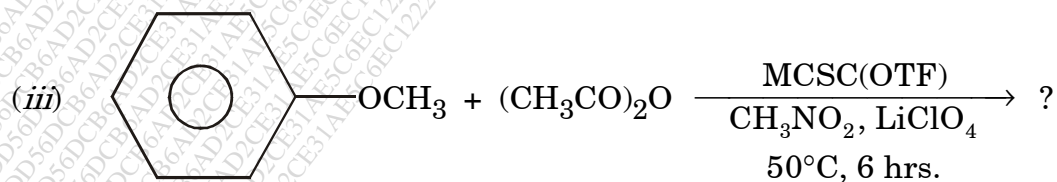
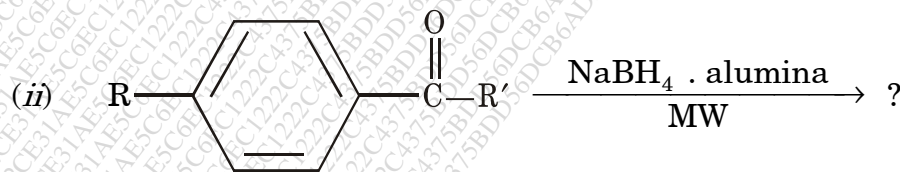
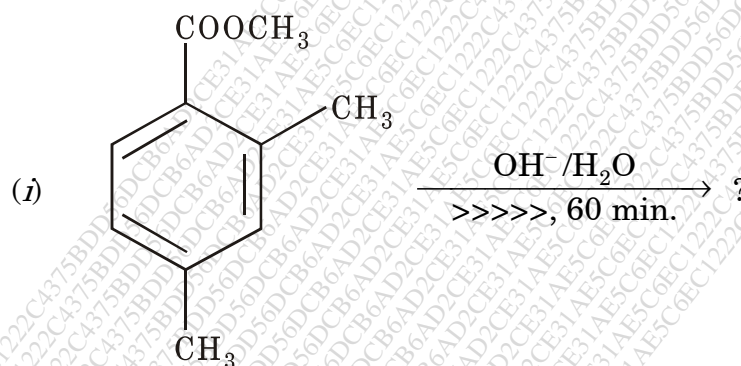
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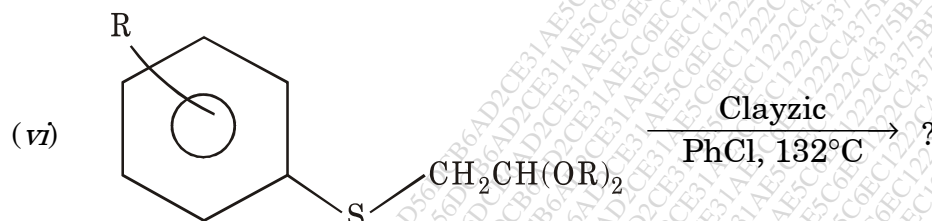
- (iv) Explain the microwave assisted reactions in water :
- (a) Hydrolysis
- (b) Oxidation.
- (v) Significance of  $K_m$  in Michael-Menten equation.
3. (A) What is Green Chemistry ? Explain the applications and uses of Green Chemistry. 7

Or

Explain Fischer's Key and Lock mechanism for enzyme action.

- (B) Predict the product (any *four*) : 8





4. (A) Explain the concept of Atom Economy in detail with various reaction types. 7

*Or*

Explain the mechanism of Enzyme action with the help of 'Induced Fit Mechanism'.

- (B) Explain the role of ionic liquid in : 8

- (a) *o*-alkylation and N-alkylation
- (b) Simmons-Smith reaction
- (c) Hydrogenation
- (d) Heck reaction.

*Or*

Explain ultrasound assisted various reactions.

5. (A) Select the *correct* alternative for the following multiple choice questions : 5

- (i) Alcohol dehydrogenase belongs to ..... class of enzymes.
  - (a) Hydrolase
  - (b) Oxidoreductase
  - (c) Lyase
  - (d) Transferase

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- (ii) Ultrasound frequencies of interest for chemical reaction ranges :
- (a) 100-200 kHz
  - (b) 20-100 kHz
  - (c) Above 200 kHz
  - (d) 10-20 kHz
- (iii) ..... is used as phase transfer catalyst in Williamson's synthesis.
- (a) K-tert butoxide
  - (b) Tributyl ammonium salt
  - (c) Tetrabutyl ammonium salt
  - (d) Both (b) and (c)
- (iv) ..... is purine base.
- (a) Cytosine
  - (b) Guanine
  - (c) Uracil
  - (d) Adenine
- (v) ..... is polymer supported chromic acid.
- (a) DMC
  - (b) Ambercyst-A-2b
  - (c) Vanadium silicate
  - (d) Pentasil zeolite

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

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- (i) Biochemical significance of Nucleotides
- (ii) Advantages of Green Chemistry
- (iii) Advantages and limitations of enzymes in organic synthesis.