

Exam. Code : 103202

Sub. Code : 1028

B.A./B.Sc. 2nd Semester MATHEMATICS

-I

(Calculus & Differential Equations)

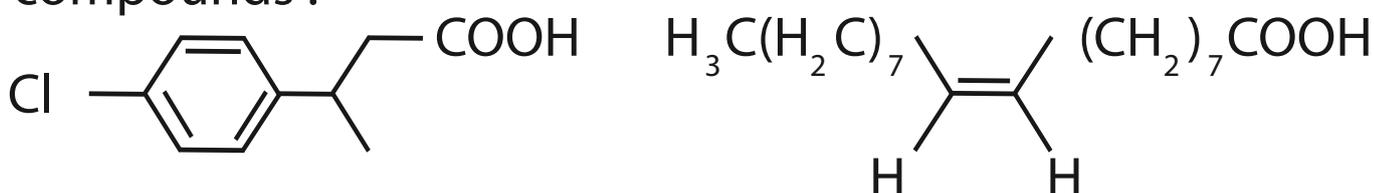
Time : 3 Hours]

[Max. Marks : 50

Note :- The question has TWO parts. Part-A is compulsory. Part-B has THREE sections. TWO questions are to be attempted from each of these sections (total SIX questions from Part-B).

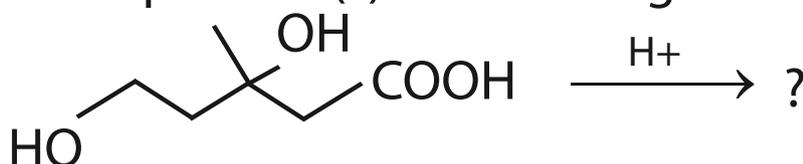
PART-A

1. Write the IUPAC nomenclature of the following compounds :



2. What product would be isolated after thermal decarboxylation of benzoylacetic acid ?

3. Write product(s) of following reaction :

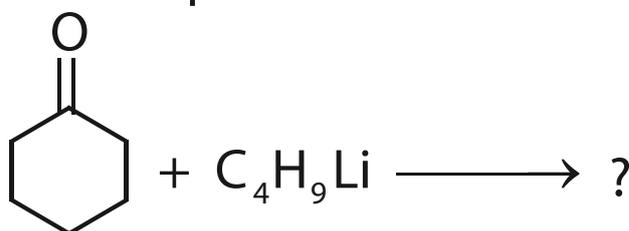


4. p-Aminoacetophenone is much weaker base than aniline. Why ?

5. Discuss stereochemistry of amine with example.

6. Discuss physical properties of ethers.

7. Write the product of following reaction:



8. Why thiophene is more aromatic than furan?

1x8=8

PART-B

SECTION-I

9. What carboxylic acid can be prepared from :

(i) Free radical chlorination of p-bromotoluene followed by preparation and hydrolysis of nitrile.

(ii) Preparation of a Grignard reagent from tert-pentyl chloride followed by carboxylation.

4.5

10. On the basis of general mechanism of hydrolysis, show mechanism of hydrolysis of two carboxylic acid derivatives with example.

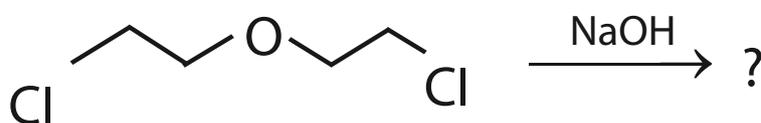
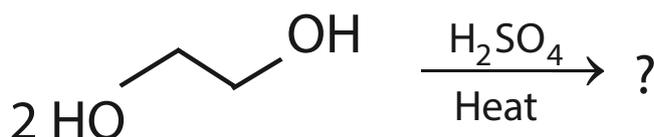
4.5

11. Discuss in detail the general mechanism for nucleophilic acyl substitution reaction. Why acyl chlorides are more

reactive toward nucleophilic acyl substitution reaction ? 4.5

SECTION-II

12. Suggest possible product(s) formation with reasonable mechanism for the following reactions :



13. Discuss the ring opening reactions of epoxide with | special emphasis on regiochemistry of ring opening reactions. 4.5

14. Discuss one method for the preparation of nitroarenes. How nitroarenes undergo reduction in acidic medium ? 4.5

SECTION-III

15. Discuss three chemical reactions involving organolithium reagents. 4.5

16. (a) Discuss two chemical reactions involving organozinc compounds.
(b) Discuss one method in each case for preparation of furan and thiophene. 4.5

17. (a) Explain trend of basic character in piperidine, pyridine and pyrrole.
- (b) Why the electrophilic attack at the α -position in pyrrole is preferred ?

4.5