

This question paper contains 6 printed pages]

WT—212—2024

FACULTY OF SCIENCE

M.Sc. (Second Year) (Fourth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

ORGANIC CHEMISTRY

Paper XXII (OCH-523)

(Organic Synthesis : Retro Synthetic Analysis)

(Monday, 16-12-2024)

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

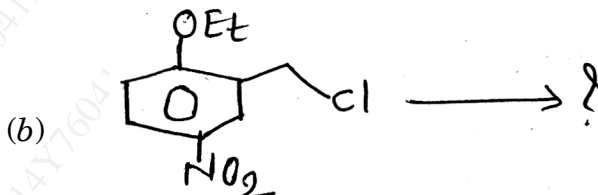
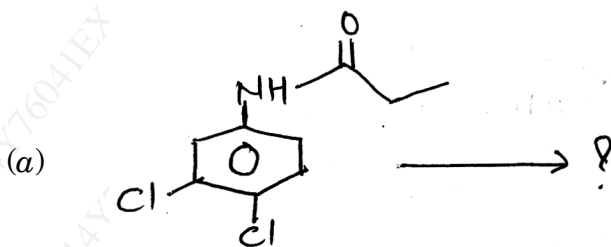
Time—3 Hours

Maximum Marks—75

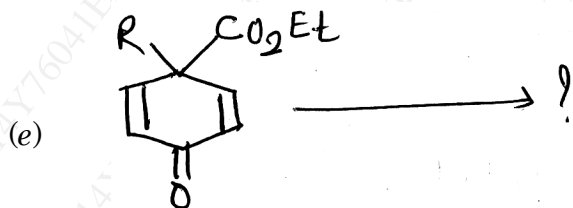
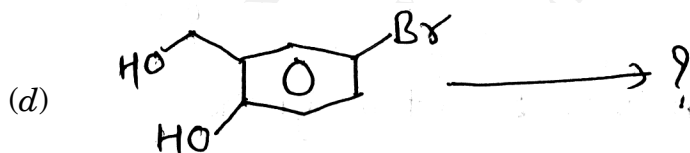
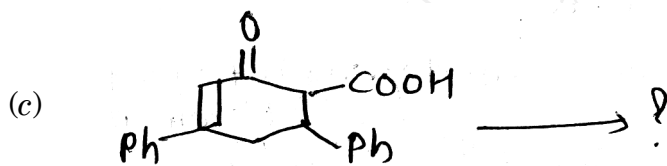
N.B. :— (1) Attempt *all* questions.

(2) Figures to the right indicate full marks.

1. Using retrosynthesis analysis, suggest suitable method, for the synthesis of the following (any *three*) : 15



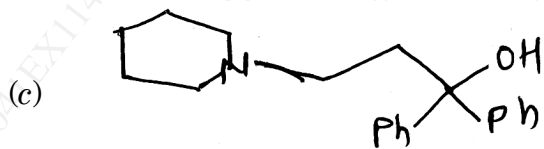
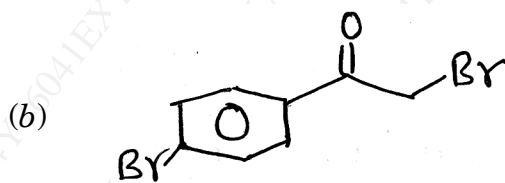
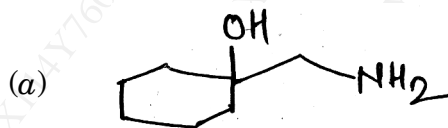
P.T.O.



2. Using retrosynthesis, suggest suitable method for the synthesis of the following

(any three) :

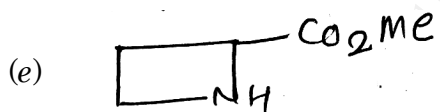
15



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(3)

WT—212—2024



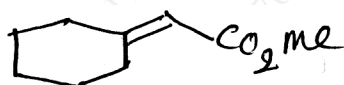
3. Solve the following :

(A) Discuss the retrosynthetic analysis of Longifoline.

8

Or

How will you synthesize the following target molecule using :



Wittig Reaction



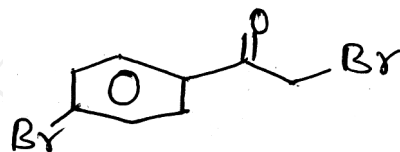
Use of acetylene

(B) Explain with example for synthesis of fine membered aromatic heterocyclic compound.

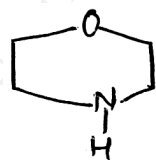
7

Or

Using the given concept of Retrosynthesis how will you synthesize the following compounds :



Reversal of polarity



Cyclisation reaction

P.T.O.

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(4)

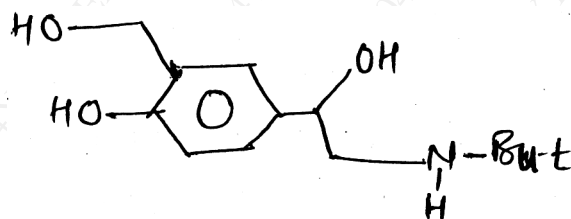
WT—212—2024

4. Solve the following :

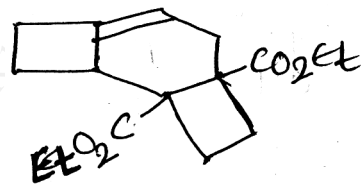
(A) Discuss the retrosynthetic analysis of Juvabione. 7

Or

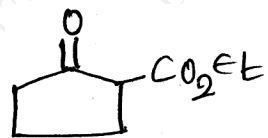
How will you synthesize the following target molecules :



(B) How will you synthesize the following target molecules using disconnection for : 8



Diels-Alder reaction



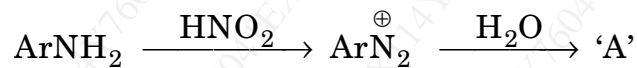
1, 3-difunctionalized compound

Or

Discuss the protection of amino group and carbonyl group using suitable examples.

5. (A) Select the correct answer from the following alternatives : 5

(i) In the following reaction 'A' is :

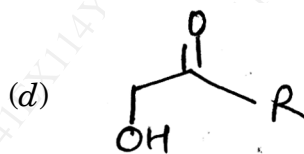
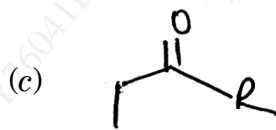
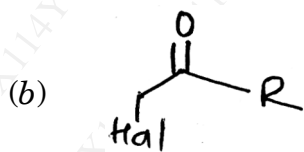
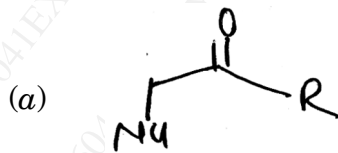


- (a) ArOH
- (b) ArCN
- (c) ArOR
- (d) ArCl

(ii) Carbonyl compound can be protected by :

- (a) Acetal
- (b) Acetyl
- (c) Methyl
- (d) Benzyl

(iii) Synthetic equivalent for $\text{CH}_2^{\oplus}\text{COR}$ is :



P.T.O.

(iv) For the synthesis of carbonyl compounds by 1, 1-c-c disconnection, the reagent used is :

- (a) RMgX
- (b) RLi
- (c) R₂Cd
- (d) None of the above

(v) The following compound undergoes disconnection via :



- (a) 1, 2-dix
- (b) 1, 2-dio
- (c) 1, 3-dix
- (d) 1, 3-dio

(B) Write short notes on any *two* of the following :

10

- (a) Synthetic equivalent
- (b) Use of acetylene compounds in organic synthesis
- (c) Retrosynthesis of Taxol.