



বিদ্যাসাগর বিশ্ববিদ্যালয়  
**VIDYASAGAR UNIVERSITY**  
Question Paper

**B.Sc. Honours Examinations 2020**

(Under CBCS Pattern)

**Semester - III**

**Subject: CHEMISTRY**

Paper : C 7-T

(Organic Chemistry - III)

**Full Marks : 60 (Theory-40 + Practical-20)**

**Time : 3 Hours**

*Candidates are required to give their answers in their own words as far as practicable.*

*The figures in the margin indicate full marks.*

[ THEORY ]

Answer any *two* questions :

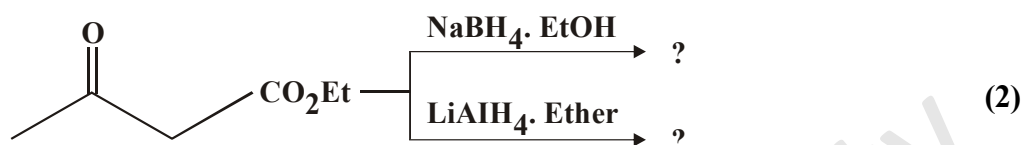
2 × 20 = 40

1. (a) Anthracene undergoes Diels-Alder reaction with maleic anhydride where phenanthrene doesn't – Explain the statement. (2)
- (b) How would you prepare *E*-2-butene from *z*-2-butene ? (2)
- (c) Arrange pyrrole, pyridine and pyrimidine according to their increasing order of reactivity towards electrophilic substitution reaction. Give proper justification. (2)
- (d) What is green synthesis ? Make a comment on water as solvent in green synthesis. (2)
- (e) Furan could be regarded as a masked 1, 4-dicarbonyl compound. Explain. (2)

(f) Give product of the following reaction product with mechanism.



(g) Predict the product of the following reactions.



(h) Predict the product with possible mechanism :

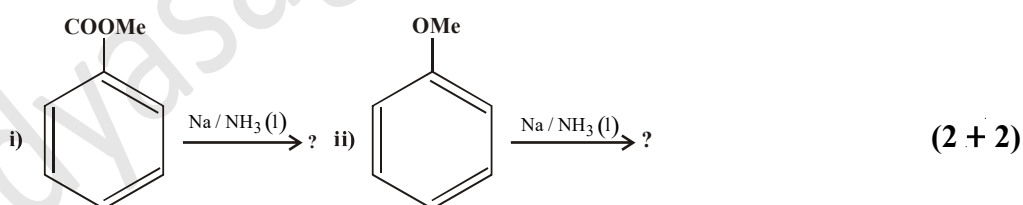


(i) Why amino acids have higher dipole moment and melting point ? (2)

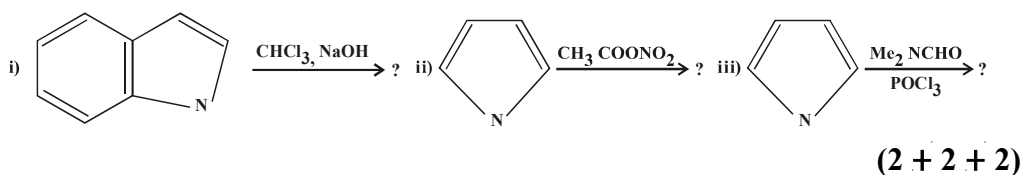
(j) What is trans-esterification ? (2)

2. (a) Compare hydrogenation of alkyne by  $\text{Pd/C}, \text{H}_2$  (both complete & incomplete reduction) and  $\text{Na}/\text{NH}_3(l)$  with mechanism. (4)

(b) Give the following reduction products with mechanism.



(c) Predict the product(s) of the following reaction with possible mechanism.



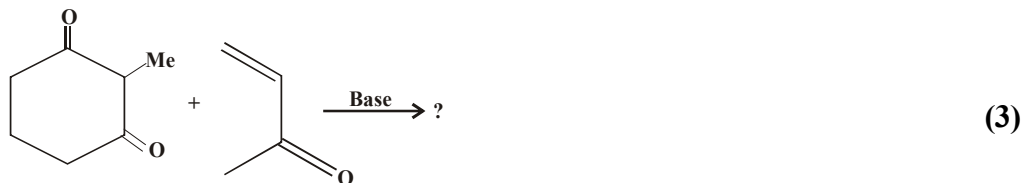
(d) Establish the mechanism of Fischer indole synthesis by isotope labelling evidence. (3)

(e) Compare Friedel-Craft alkylation and acylation reaction mechanistically ? (3)

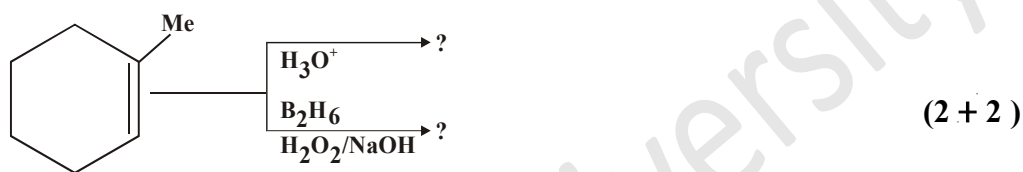
3. (a) Why organo-cuprate reagents gives better regio and stereo control than organo-lithium reagent ? (2)

(b) Comment on the preparation and stability of Benzyne ? (3)

Predict the product and suggest possible mechanism for the following reaction :



(c) Compare the reaction result mechanistically and comment ?



(d) Describe  $\text{B}_{\text{AC}}^2$  and  $\text{B}_{\text{AC}}^1$  ester hydrolysis reaction mechanism using isotope labelling. (5)

(e) Outline the synthesis of the following compound *via* a dicarbonyl compound :



4. (a) Indole undergoes electrophilic substitution at C-3 but pyrrole at C-2. Explain. (3)

(b) What happens when pyridine N-oxide is heated with acetic anhydride followed by hydrolysis of the product ? (3)

(c) If Cannizaro reaction follows green approach then explain with twelve principles known for green chemistry ? (6)

(d) How Skraup synthesis can be used to prepare 4-methylquinoline. (5)

(e) What is Corey-House synthesis ? (3)

**Paper - C 7-P**  
**(Organic Chemistry - III)**  
**(Practical)**

Systemetically analyse any **one** of the following compounds covering the following points—

1 × 20 = 20

- (i) Detection of special elements.
  - (ii) Solubility
  - (iii) Functional group detection
  - (iv) Melting point
  - (v) Preparation of derivative
  - (vi) Literature Survey
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- a) p-aminobenzoic acid
  - b) m-nitroaniline
  - c) O-nitrophenol.
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