P. P. SAVANI UNIVERSITY

Fifth Semester of B.Sc. Examination
December-2021
SSCH3070–Organic Chemistry VI

09.12.2021, Thursday **Time: 12:30 p.m. to 03:00 p.m.** **Maximum Marks: 60**

Instructions:

1. The question paper comprises of two sections.
2. Section I and II must be attempted in separate answer sheets.
3. Make suitable assumptions and draw neat figures wherever required.
4. Use of scientific calculator is allowed.

Section-I (Total Marks - 30)

Q.1 Short Questions **[10]**

1.1 Objectives **[05]**

1.1a Conventional synthesis of Ibuprofen was performed in ____ steps

- **A** 4
- **B** 5
- **C** 6
- **D** 7

1.1b Which is not included in *12 principle of green chemistry*?

- **A** Prevent Waste
- **B** Design process to maximize yield.
- **C** Reducing toxicity
- **D** Use of unnecessary substances.

1.1c Which polymer will be produce from adipic acid?

- **A** Nylone 6,6
- **B** Nylone 6
- **C** Poly adipic acid
- **D** None of above

1.1d Conventional synthesis of polyurethanes needs toxic gases like _____.

- **A** Carbon dioxide
- **B** Carbon monoxide
- **C** Cyanide
- **D** Phosgene

1.1e Nazida is an essential reactant in manufacturing a _____.

- **A** Bactericide
- **B** Antiseptic
- **C** Herbicide
- **D** Plant growth regulator

1.1f Oxidation of toluene with $KMnO_4$ gives _____.

- **A** Benzene
- **B** Methyl
- **C** Benzoic acid
- **D** Acetic acid

1.1g Which of the following is not used for esterification via MWI.

A $LdBr_3$
B $AlBr_3$
C $SmBr_3$
D $NdBr_3$

1.1h Which of the following is used in Fries Rearrangement.

A $LdCl_3$
B $AlCl_3$
C $SmCl_3$
D $NdCl_3$

1.1i The reaction involves 1,4-addition of an alkene (e.g., maleic anhydride) to a conjugated diene (e.g. anthracene) to form an adduct of six membered ring is known as _____.

A Fries Rearrangement
B Orthoester Claisen Rearrangement
C Diels Alder Reaction
D None of above

1.1j Which of the following is used as solvent in Diels Alder reaction?

A DMF
B Chlorobenzene
C Diglyme
D None of the above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[05]**

1.2a Define : Green Chemistry

1.2b Give an example of Decarboxylation reaction under MWI.

1.2c Give an example of microwave assisted saponification reaction.

1.2d What is Aliquat 336?

1.2e What is MMA?

Q.2 Short Notes (Attempt any two) **[06]**

A Explain an example of biosynthesis.

B Give comparison between Conventional heating vs Microwave heating.

C Explain following reaction and write the product A:

$$C_6H_5CONHC_6H_5 \xrightarrow[\text{MWI} \quad 12 \text{ min}]{20\ \%\ H_2SO_4} A$$

Q.3 Explain in detail (Attempt any two) **[14]**

A Write a short note: 12 Principle of Green Chemistry.

B Explain green synthesis in detail : (i) Esterification (ii) Fries Rearrangement

C Compare traditional and green synthesis of Paracetamol.

Section-II (Total Marks - 30)

Q.1 Short Questions [10]

1.1 Objectives [05]

1.1a Which of the following is more stronger base?

A Piperidine
B Pyridine
C Pyrrole
D None of the above

1.1b In indole synthesis by Bischler's synthesis which of the following compound used as catalyst?

A Chlorobenzene
B Zinc chloride
C Potassium permanganate
D Potassium dichromate

1.1c THF is derivative of _____.

A Furan
B Thiophene
C Pyridine
D Pyrrole

1.1d Which of the following is not fused Heterocycles?

A Quinoline
B Carbazole
C Indole
D Pyrazine

1.1e Industrially pyrrole is produce from _____.

A Furan
B Thiophene
C Pyridine
D Indole

1.1f Quinoline can be prepared by the condensation of o-amino Benzaldehyde with _____ in Friedlander's synthesis.

A Acetaldehyde
B Benzene
C Nitrobenzene
D Chlorobenzene

1.1g Bromination of quinolone occurs at position ____

A 2 and 6
B 3 and 5
C 5 and 6
D 5 and 8

1.1h Nitration of Isoquinoline occurs preferentially at position _____

A 8
B 7
C 5
D 6

1.1i Bromination of Thiophene gives _____ substituted derivative.

- **A** Mono
- **B** Di
- **C** Tri
- **D** Tetra

1.1j Pyridine reacts with sodium amide to give _____

- **A** 2- aminopyridine
- **B** 3- aminopyridine
- **C** 4- aminopyridine
- **D** None of the above

1.2 Answer the Following: (MCQ/Short Question/Fill in the Blanks) **[05]**

1.2a Give the name of the following compound:

1.2b Give Pall-Knorr synthesis of thiophene.

1.2c How will you prepare Furoic acid?

1.2d Write the reaction of Aniline to Quinoline conversion.

1.2e Give application of isoquinoline.

Q.2 Short Notes (Attempt any two) **[06]**

- **A** Write a short notes on Aromaticity of Pyrrole.
- **B** Explain : electrophilic attack on Pyridine is more favorable at C-3 than C-2.
- **C** Write reaction mechanism for the formation of 5-nitroquinoline and 8-nitroquinoline.

Q.3 Explain in detail (Attempt any two) **[14]**

- **A** Give detail account on Electrophilic substation reaction of Furan.
- **B** Give the Fisher-Indol synthesis with mechanism.
- **C** Give the synthesis of following compound:
  (i) Isoquinoline-5-sulphonic acid, (ii) Nicotinic Acid, (iii) 3-Chloroquinoline