

M.Sc. (CBCS) DEGREE EXAMINATION,
APRIL 2024.

Fourth Semester

Chemistry - Core

SYNTHETIC STRATEGIES IN ORGANIC
CHEMISTRY

(For those who joined in July 2021-2022 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer.

1. Betaine intermediate is formed in which chemical reaction?
- Witting reaction
 - Acyloin condensation
 - Peterson Olefination
 - Shapiro reaction

5. What is the full form of DDQ reagent?
- 2, 3 Dichloro 5, 6 Dicyano 1, 4 Benzo Quinone
 - 2, 3 Di Bromo 5, 6 Dicyano 1, 4 Benzo Quinone
 - Dichloro Dinitro 1, 4 Benzo Quinone
 - 2, 3 Dinitro 5, 6 Difluoro 1, 4 Benzo Quinone
6. In organic synthesis _____ is used as a mild oxidant
- DDQ
 - DMSO
 - Super hydrides
 - Allyl stannane
7. All the steroids when dehydrogenated with selenium distillation at 360° C yield _____
- Diels hydrocarban
 - Oestrane
 - Cyclo cholestane
 - Cyclo penteno phenanthrene
8. When lithocholic acid is subjected to vaccum distillation it yields _____
- Cholenic acid
 - Cholanic acid
 - Coprostone
 - Coprostanol

2. The naming reaction which has broad utility in synthetic methodology and complex molecule synthesis _____
- Bamford - Stevens
 - Ugi reaction
 - Nef reaction
 - Witting reaction
3. Synthons are _____
- Positively charged
 - Negatively charged
 - Neutral
 - Both (a) and (b)
4. Cis - jasmone is synthesized from which compound?
- Methyl acetoacetate
 - Acetonyl acetone
 - Acetone
 - Ethyl methyl ketone

9. If a terpenoid contains - Co-CH₃ group, it can be detected by _____ reaction
- Reduction reaction
 - Addition reaction
 - Haloform reaction
 - Methylation reaction
10. The chemical name of vitamin B₂ is _____
- Riboflavin
 - Thiamine
 - Pantothenic acid
 - Niacinamide

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Explain mechanism of Nef reaction.
- Or
- (b) Write down the mechanism of Julia Olefination.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss Bamford – Stevens reaction.
- Or
- (b) Discuss Peterson olefination reaction and its applications.
17. (a) Explain the Retrosynthesis of 2, 4 dimethyl 2 – hydroxy pentanoic acid.
- Or
- (b) Write down the retrosynthesis of Cascarillic acid.
18. (a) Explain the preparation and applications of DMSO.
- Or
- (b) Write short notes on :
- (i) Stille coupling.
- (ii) Suzuki coupling.

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12. (a) Write short notes on functional group inter conversions.

Or

- (b) Explain how Robinson annulation reaction is useful in synthesis of α, β unsaturated carbonyl compounds.

13. (a) Explain reduction by super hydrides giving examples.

Or

- (b) Discuss the applications of allyl stannane.

14. (a) How is cholesterol converted to testosterone?

Or

- (b) Write a short note on Bile Acids.

15. (a) Write down the synthesis of camphor.

Or

- (b) Write down the structural elucidation of α – Pinene.

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19. (a) Outline the main features in structural elucidation of cholesterol.

Or

- (b) Discuss the conversion of cholesterol to 5α and 5β cholanic acid.

20. (a) Discuss the structure elucidation of vitamin C.

Or

- (b) Give the synthesis of vitamin A₁.

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