STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI 600 086
(For candidates admitted from the academic year 2019-20) & thereafter

SUBJECT CODE: 19CH/MC/OC44

B.Sc. DEGREE EXAMINATION, APRIL 2023
BRANCH IV - CHEMISTRY
FOURTH SEMESTER

COURSE : MAJOR – CORE
PAPER : ORGANIC CHEMISTRY - II
TIME : 3 HOURS **MAX. MARKS : 100**

SECTION – A

ANSWER ALL THE QUESTIONS. **(30x1=30)**

I Choose the correct answer.

1. Phenol undergoes an electrophilic substitution to give the following product
   a) Ortho b) Para c) Meta d) Ortho & Para
2. When treated with conc.H_2SO_4, an alcohol undergoes the following reaction
   a) Addition b) Substitution c) Dehydration d) None of the above
3. Benzoic acid reacts with PCl_5 to give
   a) Chlorobenzene b) Benzyl chloride c) Benzoyl chloride d) Benzene
4. Phthalic acid on heating gives
   a) Phenolphthalein b) Phthalic anhydride c) Phthalimide d) Phenol
5. Hinsberg's reagent is
   a) Benzoylchloride b) Benzyloxybenzene
   c) Benzene sulfonyl chloride d) Benzenesulfonamide
6. TNT is
   a) 2,4,5,6-tetranitrotoluene b) Trinitrotoludine
   c) Tridhydroxytoluene d) 2,4,6-trinitrotoluene
7. Diazomethane is a potential source for the following intermediate
   a) Benzyne b) Carbene c) Nitrene d) Betaine
8. Ethylacetoacetate reacts with CH_3MgBr to yield
   a) CH_3COOH b) CH_3COCH_3 c) CH_4 d) CH_3CH_2OH
9. An example for vat dye is
   a) Alizarin b) Indigo c) Crystal violet d) Methyl orange
10. Azo dyes contain the following functional group
    a) -C=N- b) -C=C=N- c) -N=N- d) None of the above

II Fill in the blanks:

11. Phenol is weakly_____in nature.
12. The major by-product of saponification process is _____
13. Anhydrous acetic acid is also known as_____
14. The IUPAC name of Adipic acid is _____
15. The common name of 2,4,6-trinitrophenol is _____
16. The _____ nitroalkane do not show tautomerism.
17. The number of acidic hydrogen(s) in Diethylmalonate are _____
18. Diazomethane reacts with HCl to give _____ with elimination of N_2.
19. Leucoindigotin when exposed to atmospheric oxygen is converted to _____.
20. _____ is an example for mordant dye.

III State whether true or false:

21. Resorcinol is Benzene-1,4-diol.
22. Cinnamic acid decolourizes with bromine water.
23. Aniline is more basic than ammonia.
24. Knoevenagel reaction yields α,β-unsaturated acids.
25. Green is the complementary colour to yellow.

IV Answer in a line or two:

26. Give the oxidative products of glycerol with HIO_4.
27. Why acetyl chloride fumes in moist air?
28. Write a Coupling reaction of Diazonium chloride.
29. What is an active methylene group? Give an example.
30. How phenolphthalein is prepared in the laboratory?

Section – B

Answer any five questions. **(5 x 6 = 30)**

31. Explain the Riemer-Tiemann reaction with mechanism.
32. Write any two methods of preparation of acetamide. How does it react with LiAlH4?
33. Explain the action of heat on α-hydroxy acid, β-hydroxy acid and γ-hydroxy acid.
34. How separation of amines is achieved using Hinsberg method?
35. Convert acetoacetic ester into (i) Succinic acid (ii) acety acetone (iii) n-butyric acid.
36. How dyes are classified based on their chemical structure?
37. Write the preparation of Malachite Green and its applications.

Section – C

Answer any two questions. **(2 x 20 = 40)**

38. a) Explain the mechanistic details of the following reactions of phenol:
    (i) Kolbe's reaction (ii) Coupling reaction
    b) Explain Trans esterification with examples.
    c) Explain the acid and base catalyzed ring opening reactions of epoxides. (10+5+5)

39. a) How does nitrobenzene reduce under acidic, alkaline and neutral medium.
    b) Discuss in detail the synthetic applications of diazonium compounds. (10+10)

40. a) Substantiate the synthetic applications of Diethylmalonate with examples.
    b) How will you prepare the following from diazomethane?
    (i) Anisole (ii) Dimethyl ether (iii) Pyrazole (iv) cyclopropane
    (10+10)