STELLA MARIS COLLEGE (AUTONOMOUS) CHENNAI-86
(For candidates admitted during the academic year 2015-16&thereater)

SUBJECT CODE: 15CH/PC/SO34

M.Sc. DEGREE EXAMINATION, NOVEMBER 2018
BRANCH IV- CHEMISTRY
THIRD SEMESTER

COURSE: CORE
PAPER : SYNTHETIC ORGANIC CHEMISTRY AND NATURAL PRODUCTS
TIME : 3 HOURS **MAX.MARKS :100**

SECTION – A **(20x1=20)**

Answer all the questions:

Choose the correct answer:

1. Which among the following can be synthetic equivalents for acetyl cation CH_3CO^+?
   a) CH_3COCl b) $(CH_3CO)_2O$ c) CH_3COOH / CH_3COONa d) All the above

2. The reaction of acetone with NaOH and bromoacetone in sequence forms _____.
   a) 1,2-diketone b) 1,3-diketone c) 1,4-diketone d) aldol

3. Which among the following is/are an example of stereospecific reaction/s?
   a) Diels Alder addition b) dehydrohalogenation of 2-bromobutane
   c) HBr addition to propene d) all of these

4. CH_2=$CHCH_3$on reaction with *N*-bromosuccinimde forms_____.
   a) allyl bromide b) isopropyl bromide c) n-propyl bromide d) vinyl bromide

5. The reagent required to convert CH_3COCH_3 into CH_3COOCH_3is_____.
   a) DDQ b) DCC c) $C_6H_5CO_3H$ d) OsO_4

6. Iodobenzene on reaction with lithium dimethyl cuprate forms_____.
   a) Toluene b) xylene c) cyclohexane d) benzaldehyde

7. *Tri-n*-butyl tin hydride reduces_____.
   a) CH_3Br b) CH_3COCl c) C_6H_5I d) all of these

8. The total number of isoprene in zinziberene is _____.
   a) 4 b) 3 c) 1 d) 2

9. Which of the following methods is/are used for the isolation of terpenoids?
   a) Steam distillation b) Solvent extraction
   c) Enfluerange process d) all of these

10. The number of $–OCH_3$ groups present in papaverine is _____.
    a) 4 b) 3 c) 1 d) no $–OCH_3$ groups

Fill in the blanks:

11. The term 'Umpolung' in the retrosynthetic analysis refers _____.
12. The reaction of OsO_4 with cyclohexene forms_____.
13. Ethyl acetoacetate on reduction using Baker's yeast gives_____.
14. The fundamental unit in terpenes / terpenoids is_____.
15. Flavonoids give _____ coloration on Ferric chloride test.

State whether true or false:

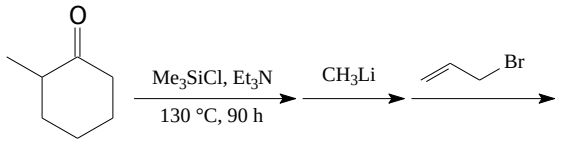
16. Markovnikov's addition is a stereoselective reaction.
17. Dithianes are good protecting agents for carbonyl functional groups.
18. Dicyclohexyl-18-crown-6 complex of $KMnO_4$ is soluble in benzene solvent.
19. Papaverine is not a phenanthrene alkaloid.
20. Zinziberene is a monocyclic sesquiterpene.

SECTION – B

Answer any five questions: **(5x8=40)**

21. a. Explain the use of CN^- ion in the Benzoin condensation reaction. (4)
    b. Discuss the stereoselective reaction sequences in Michael addition reaction. (4)

22. a. Predict suitable synthon and synthetic equivalents for $C_6H_5CH_2C{\equiv}CH$. (2)
    b. Predict the product for the following reaction. (6)



23. a. Give the applications of propan-1,3-dithiol as protecting group. (4)
    b. Write the synthetic applications of tosyl chlorides. (4)

24. a. Discuss the mechanism of Ziegler-Natta polymerisation. (4)
    b. Write short note on the use of crown ethers in organic synthesis. (4)

25. a. How are $-OCH_3$ groups on anthocyanin estimated? (4)
    b. How is the position of double bond in zinziberene confirmed? (4)

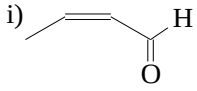
26. a. Discuss the general methods for the determination of the structures of flavones. (6)
    b. How will you convert salicylaldehyde into 2-phenyl benzopyrilium chloride? (2)

27. Discuss the structural elucidation of daidzein. (8)

SECTION – C

Answer any Two questions. **(2x20=40)**

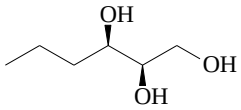
28. a. Analyse retrosynthetically the following compounds and suggest suitable forward synthesis. (5 + 5)

i) 

ii) 

b. Illustrate with an example in the use of protection and deprotection of alcohols and amine functional groups in the organic synthesis. (5)

c. Apply functional group interconversion principle and give the retro synthesis of the following compound.



(5)

29. a. Give two synthetic applications each of DCC and DDQ. (4 +4)

b. Write the mechanism of SeO_2 oxidation of 2-methyl propene. (4)

c. Discuss the general methods of structure determination of terpenoids. (8)

30. a. Elucidate the structure of papaverine. (8)

b. Write any three colour tests in the detection of flavonoids? (6)

c. Discuss the structural elucidation of quercetin. (6)

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