EASTERN UNIVERSITY, SRI LANKA
THIRD EXAMINATION IN SCIENCE (FIRST SEMESTER)- 2002/2003
REPEAT
CH 301 CHEMISTRY OF NATRUAL PRODUCTS

Time: 01 Hour
Answer all questions

(1). Answer all three parts (a), (b), and (c)

(a). Draw the Fischer projection formulae of Ribose, Arabinose sugars having the D-configuration.

A D (+)- aldopentose **A** ($C_5H_{10}O_5$) on treatment with sodium borohydride ($NaBH_4$) gives an optically active compound **B**($C_5H_{12}O_5$). Treatment of **A** with bromine water gives **C** ($C_5H_{10}O_6$), which when heated with concentrated ammonia gives **D** ($C_5H_{11}NO_5$). Treatment of **D** with bromine in sodium hydroxide gives **E** ($C_4H_8O_4$), which reacts with sodium borohydride giving an optically inactive compound **F** ($C_4H_{10}O_4$).

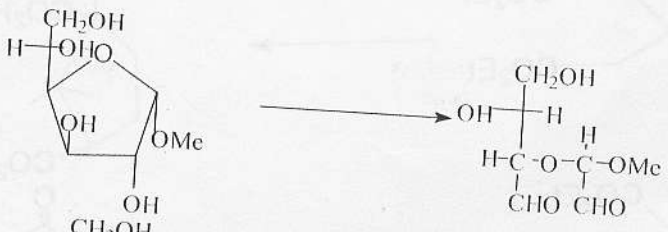
Deduce the structures of the compounds **A, B, C, D, E** and **F.** By means of equations show how the compound **A** could be converted to D (+)-fructose

(b). (i). Name all the sugars that will yield the same osazone as D-glucose.

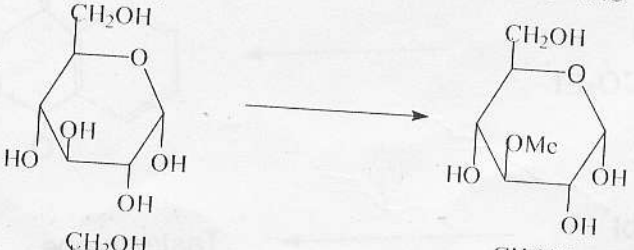
(ii). Show how D- glucose forms an osazone upon reaction with an excess of Phenyl hydrazine ($PhNHNH_2$) (your answer should include mechanism of the reaction)

(c). By means of equations show how **two** of the following conversions maybe effected. Give essential experimental conditions

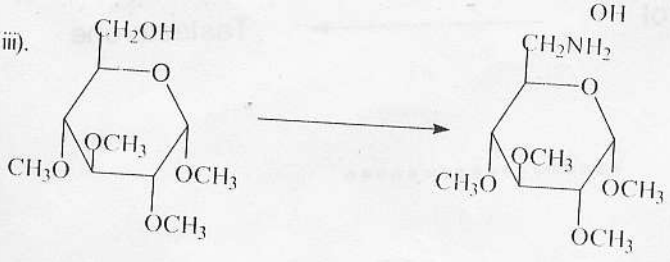
(i).



(ii).



(iii).



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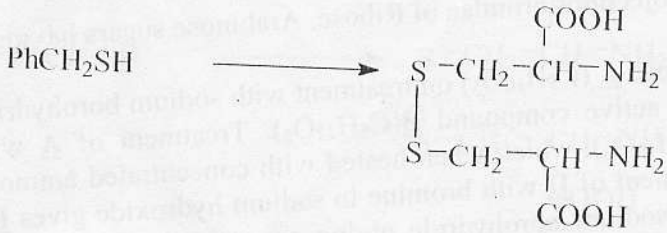
2. Answer all three parts (a), (b), and (c)

(a). Give the isomeric natures of the Citral and discuss a method to synthesis one its isomers

(b). (i). Show how Phenyl isothiocyanide (Ph-NCS) could be used to determine the N-terminal residue in a peptide.

(ii). Indicate by means of equations, how the following transformation maybe effected.

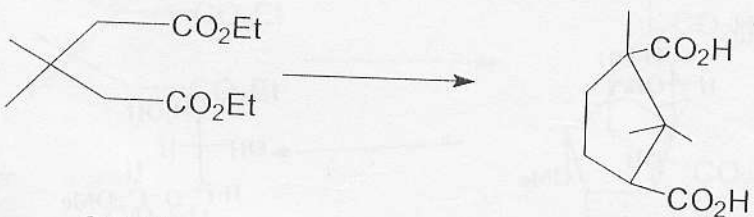


(c). (i). Why the esterification reactions occurs readily in menthol than in neomenthol.

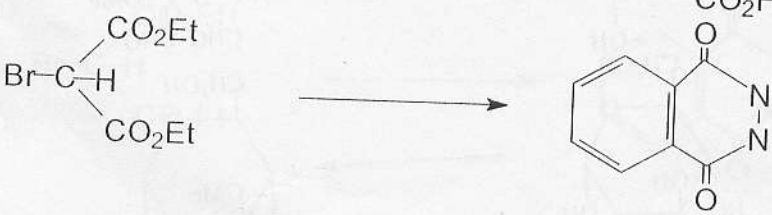
(ii). Write down the structure of cholesterol and explain two colour reactions specific for cholesterol

(iii). By means of equations, show how the following transformations could be effected. Give essential experimental conditions.

(i).



(II).



(III). Cholesterol ⟶ Testesterone

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