Eastern University, Sri Lanka

Third Year First Semester Examination in Science

2008/2009 (February 2010)

CH 301 CHEMISTRY OF NATURAL PRODUCTS

(Proper)

Answer all questions **Time : 01 hour**

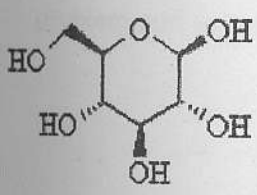
1) (a). A Carbohydrate **X** having molecular formula $C_{12}H_{22}O_{11}$ gave a negative test with Fehling's solution, complete hydrolysis with TFA at high temperature. Followed by paper chromatography shows it contains galactose and glucose. ^1H nmr spectrum of **X** shows 2 proton signals at δ ppm 4.8($J_{H_1H_2} = 7.0Hz$) & δ ppm 5.1($J_{H_1H_2} = 3.7Hz$) which were to glucose & galactose respectively. **X** on treatment with CH_3SOCH_3/NaH followed by MeI resulted **Y**, which upon hydrolysis with acid at high temperature gave 2,3,4,6 tetra-O-methyl-D-galactopyranose & 2,3,4,6 tetra-O-methyl-D-glucopyranose in equal amount.

Deduce the structure of X and Y and explain all above the information.

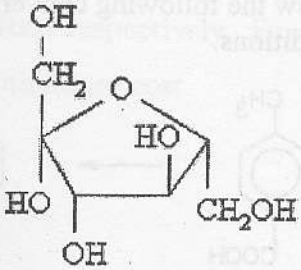
(40 marks)

(b). For each of the following structures:

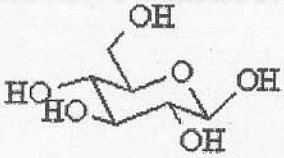
(i) Identify the anomeric center, hemi-acetal, kemi-ketal and (ii) a furanose or a pyranose



(a)



(b)

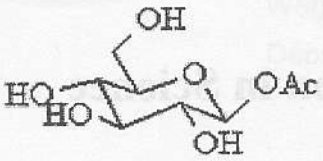


(c)

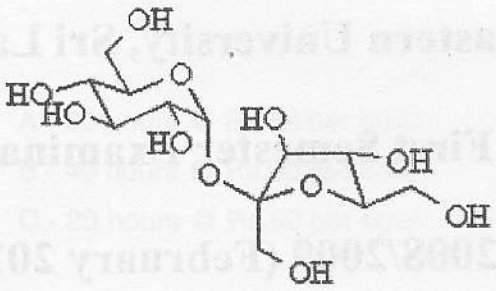
(30 marks)

Turn Over

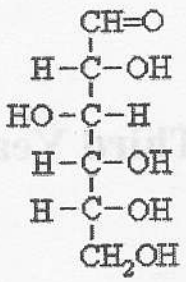
(ii) Which of the following sugars are reducing sugars? Give reasons?



(a)



(b)

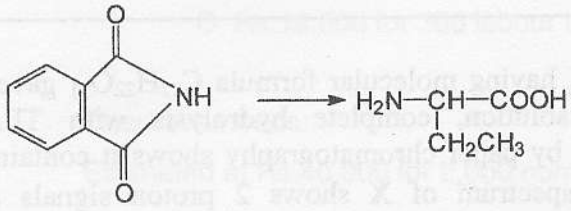


(c)

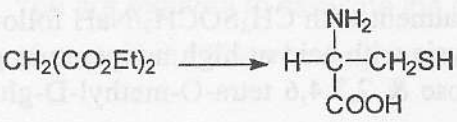
(30 marks)

2. (a) Indicate by means of equation how the following transformation may be effected?

(i)



(ii)



(40 marks)

(b) Using the chemical equations briefly explain the reaction of Ninhydrin with an amino acid.

(30 marks)

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

(30 marks)

End of paper