This question paper contains **2** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **2104**

Unique Paper Code : **32173908** **GC-3**

Name of the Paper : **SEC-8-Green Methods in Chemistry**

Name of the Course : **B.Sc. (H)/B.Sc. Prog.**

Semester : **III**

Duration : **2 Hours** Maximum Marks : **37½**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *three* questions in all.

Question No. **1** is compulsory and each question carries **12½** marks.

1. Answer the following :

   (*a*) "Green Chemistry is sustainable chemistry." Explain the statement.

   (*b*) Complete the following equation :

   Risk = Hazard × ..... .

   (*c*) Which of the following is not one of the twelve principles of green chemistry :

   (*i*) Less Hazardous chemical synthesis.

   (*ii*) Maximization of atom economy

   (*iii*) Using high temperature to speed up reactions

   (*iv*) Use of Renewable feedstocks.

   (*d*) Atom Economy is a measure of the ..... of a reaction.

   (*e*) Define rightfit pigment. Why are they also be called Azopigments ?

P.T.O.

(*f*) Explain the working mechanism of carbon dioxide surfactants in garment industry.

[2,1,1,1, 3½, 4]

2. (*i*) What is Green Chemistry ?

(*ii*) Write twelve principles of Green Chemistry with explanation. [2, 10½]

3 (*a*) Define ATOM ECONOMY.

(*b*) How can you improve the Atom Economy of a reaction ?

(*c*) Calculate the ATOM ECONOMY of the following reaction :

The Fermentation of the Sugar to make ethanol

$$C_6H_{12}O_6(aq.)2C_2H_5OH\ (aq.) + 2CO_2(g)$$

(*d*) List the problems associated with Lead and Cadmium based pigments. How can these problems be resolved ? [2, 2, 5, 3½]

4. Write short notes on the following :

(*a*) Surfactants for carbon dioxide

(*b*) Ionic Liquids

(*c*) Green Energy and Sustainability. [4, 4, 4½]