Uva Wellassa University of Sri Lanka
Faculty of Science and Technology
Department of Science and Technology
100 Level 1st Semester Examination – May/July 2017
BBST 141-3 General Chemistry
Part C – Essay Questions

Uva Wellassa University

30 (3)

Answer all the questions

1. The energy of a single qunatum is given by $E = h\nu$ where $\nu = c/\lambda$. All the symbols has standard meanings. Plank's constant is 6.63×10^{-34} Js and speed of light is 3.0×10^{8} ms^{-1}. Calculate the energy **in joule** of

(a) a photon with a wavelength of 5.00×10^{4} nm (IR region) **(20 Marks)**

(b) a photon with a wavelength of 5.00×10^{-2} nm (X-ray region) **(20 Marks)**

(c) Which photon has the higher energy **(20 Marks)**

2. N_2, H_2 and NH_3 is in a container having 3.50 L at 375°C. These specieses can form an equilibrium as shown in the following reaction.

$$N_2\,(g) + 3H_2(g) \rightleftarrows 2NH_3\,(g)$$

The concetrations of N_2 , H_2 and NH_3 are 7.11×10^{-1} M, 9.17×10^{-3} M and 1.83×10^{-4} M respectively. It is given that the Kc for the above system at 375 °C temperature is 1.2. Decide whether the system is at equilibrium. If it is not predict which way the net reaction will proceed.

(60 Marks)

3. What do you understand by following terms. Provide at least one balanced chemical reaction for each

a. Combination reaction **(20 Marks)**

b. Decomposition reaction **(20 Marks)**

c. Single-displacement reaction **(20 Marks)**

d. Double displacement reaction **(20 Marks)**