Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B. Pharmacy Sem-II Remedial Examination Nov/ Dec. 2010

Subject code: 220006 **Subject Name: Physical Pharmacy**

Date: 08 /12 /2010 **Time: 10.30 am – 01.30 pm**

Instructions: **Total Marks: 80**

1. **Attempt any five questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 (a) Describe Newtonian and non Newtonian system. **06**

(b) What are the methods for determining particle size of powder? Describe **Any Two** of them. **05**

(c) Consider an O/W emulsion containing mineral oil with a specific gravity of 0.9 dispersed in an aqueous phase having a specific gravity of 1.05. If the oil particles have an average diameter of 5 μm, the external phase has a viscosity of 0.5poise and gravity constant is 981 cm/sec^2. What is the velocity of creaming in cm/sec? **05**

Q.2 (a) Which are the parameters of solubility of solid in liquids? How do you calculate the solubility of weak electrolytes as influenced by pH? **06**

(b) Which are the applications of surface active agent? **05**

(c) The following data apply to 1gm sample of granular powder: **05**

Volume of the solid alone = 0.3 cm^3/g

Volume of intraparticle pores= 0.1 cm^3/g

Volume of spaces between particles = 1.6 cm^3/gm

What are the specific true volume,V, the specific granular volume V_g, specific bulk volume, V_b. Compute the total porosity E_{total}, the interspace porosity, $E_{interspace}$ and the intraparticle porosity $E_{intraparticle}$.

Q.3 (a) Write a short note on spreading coefficient. **06**

(b) Describe the binding forces of molecules **05**

(c) Calculate the ideal solubility of thymol expressed as mole fraction, at 40oc and converts it into molality and weight percent. Heat of fusion of thymol is 4126 cal/mole, melting point is 51.5^{0}c and molecular weight is 150.2 g/mol. Melting point of salol is 42^{0}c and molecular weight is 214.2 g/mol **05**

Q.4 (a) Write a short note on application of colloids in pharmacy **06**

(b) Describe solubility of gases in liquids **05**

(c) A solution contains 1 gm of ephedrine sulfate in a volume of 100 ml. What quantity of sodium chloride must be added to make the solution isotonic? How much dextrose would be required for this purpose? E = 0.23. **05**

Q.5 (a) Describe the methods for determining the surface area of powder? **06**

(b) Write a short note on determination of rheological properties **05**

(c) A mixture containing 25% phenol in water was prepared. Warmed the solution and allowed to reach to equilibrium at 50^{o}c. On separation of two phases, which contain 11% and 63% of phenol respectively. If the total weight of the original mixture was 200 gm, calculate a) weight of each phase at equilibrium and b) actual weight of phenol in gm, in each phase. **05**

Q. 6	(a)	Write a short note on buffers in pharmaceutical system.	**06**
	(b)	How do we prepare controlled flocculation?	**05**
	(c)	The velocity of migration of an aqueous ferric hydroxide solution was 16.5 x 10^{-4} cm/sec at 20^{o}c. The distance between the electrodes in the cell was 20 cm and the applied emf was 110 volts. What is a) the zeta potential of the solution and b) the sign of the charge on the particles?	**05**
Q.7	(a)	What is polymorphism? Describe its importance with example.	**06**
	(b)	Describe the theory of emulsification	**05**
	(c)	A sample of chloroform having density of 1.476 g/cm^3 rose to a height of 3.67 cm at 20^{0}c in a capillary tube having an inside radius of 0.1 mm. Calculate the surface tension of chloroform at this temp.	**05**

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