Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V • EXAMINATION – WINTER 2013

Subject Code: 153605 **Date: 04-12-2013**

Subject Name: Microbiology and Formulation Technology of Liquids and Topicals

Time: 10.30 am - 01.00 pm **Total Marks: 70**

Instructions:

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

Q.1	**(a)**	Discuss large scale manufacturing of simple syrup starting from raw materials to the final product. Also indicate the quality control parameters for the same. (Note: One of the constituents of simple syrup is purified water. The entire large scale manufacturing of "purified water' with the flow chart is also expected)	**07**
	(b)	What are antigens and antibodies? Discuss the structure of an antigen briefly indicating 'epitopes' and their role. Also discuss the structure of an antibody with the help of a schematic and describe its various parts.	**07**
Q.2	**(a)**	Define a suspension and list the typical formulation ingredients. Discuss the large scale manufacturing of a suspension of all three types. Explain with the help of a figure of the assembly.	**07**
	(b)	List the various first-line chemical defenses of the body indicating what in each particularly kills microbes. Explain the process of phagocytosis with the help of a figure.	**07**
		OR	
	(b)	Explain the entire process of immunity building with the role of all types of WBC's starting from an infection for the first time to how it is tackled henceforth.	**07**
Q.3	**(a)**	Discuss in detail the following quality control parameters for suspensions: sedimentation, particle size, assay, content uniformity, stability and preservative efficacy.	**07**
	(b)	Explain the terms sterilization, disinfection, asepsis and sanitization. What are the three kinds of bacterial deaths? Explain with plots.	**07**
		OR	
Q.3	**(a)**	Discuss in detail the following quality control parameters for emulsions: phase separation, globule size, assay, content uniformity, stability and preservative efficacy	**07**
	(b)	Discuss the factors affecting sterilization. What would happen to the extent of sterilization with (i) increase in temperature (ii) increase in initial bacterial number? List the various methods of bacterial preservation indicating the main feature of each.	**07**
Q.4	**(a)**	Explain creaming and cracking of emulsions in detail and what could be done to avoid it.	**07**
	(b)	List any five methods of measuring microbial growth. Discuss the serial dilution method in great detail with the help of figures.	**07**
		OR	
Q.4	**(a)**	Discuss in detail the function, usage and characteristics of wetting agents and suspending agents in suspensions	**07**
	(b)	Explain the four phases of microbial growth giving details of each with the help of a graph.	**07**

Q.5	**(a)**	What are the advantages of suppositories? What are the ideal characteristics of a suppository base? List the six kinds of suppository bases.	**07**
	(b)	List any five physical and five chemical agents used for sterilization, explaining the mechanism of action each. Draw a schematic of an autoclave.	**07**

OR

Q.5	**(a)**	Differentiate between (i) ear drops and nasal drops and (ii) pastes and ointments (four points each)	**07**
	(b)	What is taxonomy? Discuss the 'Nucleic acid hybridization method' used to determine the DNA base composition.	**07**

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