

**D.K.M. COLLEGE FOR WOMEN (AUTONOMOUS), VELLORE-1****SEMESTER EXAMINATIONS****APRIL - 2018****15CMB6C****INDUSTRIAL AND PHARMACEUTICAL MICROBIOLOGY****Time : 3 Hours****Max. Marks : 75****SECTION – A (10 x 2 = 20)****Answer ALL the questions.**

1. Define Protoplast fusion.
2. Explain Fed - batch fermentation.
3. Define Site - directed mutagenesis.
4. Explain Koji process.
5. What is sterility testing?
6. What is recombinant vaccine?
7. Define HACCP.
8. Explain Bacterial endotoxins.
9. Define GMP.
10. Define Quality Assurance.

**SECTION – B (5 x 5 = 25)****Answer any FIVE of the following questions.**

11. How to design a Media for a fermentation process?
12. Write the microbial production of citric acid by submerged fermentation.
13. Write the microbial production of glutamic acid.
14. Write the Chick - Martin test for evaluation of disinfectants.
15. Write short notes on factors influencing the microbial spoilage of pharmaceutical products.
16. Write short notes on validation and monitoring of sterilization process in pharma industries.
17. Describe the methods employed in preservation of pharmaceutical products.
18. Write short essay on gaseous sterilization methods.

**SECTION – C (3 x 10 = 30)****Answer ALL the questions.**

19. (a) Describe the methods employed in strain improvement of industrially important microbes.  
(Or)  
(b) Write an essay on the production of recombinant vaccine.
20. (a) Microbial production of Biosynthetic penicillin and its recovery process - Explain.  
(Or)  
(b) Write in detail about the Microbial synthesis of Vitamin B<sub>12</sub>.
21. (a) Write an essay on quality control and quality assurance practices in Pharma Industries.  
(Or)  
(b) Describe the types of sterilization methods employed in pharmaceutical industries.