A Reg. No. : | | | | | | | | | | |

Question Paper Code: 59909

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Chemical Engineering

15UCH909- BIO CHEMICAL ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. _____ is used to produce citric acid. CO1 -R

   (a) Aspergillus niger (b) Lactobacillus (c) Bacillus (d) Yeast

2. A typical gram-negative cell is _____. CO1 -R

   (a) E.coli (b) Aspergillus niger (c) Lactobacillus (d) Fungi

3. The most commonly employed cross-linked polymer is the_____. CO2 -R

   (a) Polyacrylamide gel (b) Collagen

   (c) Celluloses (d) Cation exchange resin

4. The types of inhibition pattern based on Michaelis Menten equation are_____. CO2 -R

   (a) Competitive (b) Competitive (c) Uncompetitive (d)All of the above

5. The presence of a modulator would activate the enzyme activity is termed as enzyme _____. CO3 -R

   (a) Activity (b) Activity (c) Specificity (d) None of the above

6. How many phases involved in the growth cycle of a batch cultivation. CO3 -R

   (a) 2 (b) 4 (c) 1 (d) 0

7. The unit of mass transfer coefficient is_____. CO4- R

   (a) $mol/m^2.s$ (b) mol/cm.s (c) m^2 (d) mol/sec

8. _____is the sea of nutrients in which the microorganisms grow. CO4- R

(a) Broth (b) Culture (c) Carbon (d) Liquid

9. A common filter medium is the cloth filter generally made of_____. CO5 -R

(a) Canvas (b) Synthetic fibers (c) Metal or Glass fiber (d) All of the above

10. _____membrane separation techniques used in protein isolation. CO5 -R

(a) Chromatography (b) Reverse osmosis (c) Centrifugation (d) Filtration

PART – B (5 x 2= 10 Marks)

11. What are proteins? CO1- U
12. Define enzymes. CO2- U
13. Draw the growth curve for batch cell cultivation. CO3- R
14. Define Power Number. CO4 -R
15. What is ultra filtration? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Write down the various organisms and their fermentation products in detail. CO1- U (16)

Or

(b) Explain in detail about cellular genetics. CO1- U (16)

17. (a) Explain the classification of enzymes. CO2 -U (16)

Or

(b) Write down the effect of pH and temperature on enzyme activity. CO2- U (16)

18. (a) Explain the thermal death kinetics of cells and spores CO3 -U (16)

Or

(b) Explain the design of the fluidized bed reactor with a neat sketch. CO3- U (16)

19. (a) Explain the Film theory in bioprocessing. CO4 -U (16)

Or

(b) Find the equation for Convective mass transfer of Liquid – gas mass transfer in bioprocessing. CO4 -U (16)

20. (a) What is cell disruption? Explain in detail the various mechanical and chemical methods employed for cell disruption. CO5 -U (16)

Or

(b) Explain in detail the different methods employed for protein precipitation. CO5 -U (16)