

Chapter 12

Bioprocess Engineering and Process Biotechnology

1. The T7 system of protein expression induced by
 - (A) isopropyl- β -D-thiogalactoside (IPTG).
 - (B) manipulate the carbon sources at the time of *E. coli* growth.
 - (C) maintaining the inducing temperature 50–60°C that make it soluble.
 - (D) pET system manual.
2. The aliphatic polyesters can
 - (A) produced by bacteria processing cornstarch or glucose.
 - (B) be transparent plastic produced by dextrose.
 - (C) produced biobased and isocyanate-free polyurethanes.
 - (D) become thermoplastic by extensive modification.
3. Identify the antibiotics and there uses.
 - (A) Rapamycin – anti-fungal compound against a variety of soil-dwelling fungi
 - (B) Garamycin – treat bacterial infections like endocarditis
 - (C) Ceclor – for fungal infections of skin
 - (D) Ancef, Kefzol – for bacterial infections during certain surgeries
4. When,
H1 = Total heat of air entering the coil (heating or cooling)
H2 = Total heat of air leaving the coil (heating or cooling)
H3 = Total heat of air at the end of the process (humidification or dehumidification)
then, the sensible heat factor $(H2 - H1) / (H3 - H1)$ represents the process of
 - (A) Heating
 - (B) Dehumidification
 - (C) Humidification
 - (D) Cooling
5. What is an ideal fluid?
 - (A) A fluid which has no viscosity
 - (B) A fluid which does not offer shear resistance
 - (C) A fluid which is not incompressible
 - (D) A fluid which has no surface tension
6. The convection heat transfer coefficient depends upon
 - (A) the thermal properties of fluid.
 - (B) geometry of the system.
 - (C) the physical properties of solid surface.
 - (D) characteristics of the fluid flow.

7. Functional groups of the nonessential amino acid residues that are suitable for the immobilization process are
(A) free α -, β - or γ -carboxyl groups
(B) α - or β -amino groups
(C) phenyl, hydroxyl and sulfhydryl group
(D) enolizable ketone groups
8. Continuous stirred tank reactor refers to
(A) separate substrate inlet and reactor mix.
(B) degree the reaction proportional to the length of reactor column.
(C) adjustment of percentage conversion of substrate into product.
(D) high enzymatic activity and high yield.
9. What are the limitations of Batch-wise in fermenter?
(A) It takes so much time in production and a complicated method
(B) It occupies increased plant space
(C) It requires additional equipment of higher cost
(D) It required increased steam usage
10. Which of the following are the correct difference between open system and closed system?
(A) Open system doesn't have any feedback loop.
(B) Closed output of the system is not fed back into the input to the system.
(C) Open loop system highly sensitive to parameters changes.
(D) Error detector present in closed loop.
11. Which of the following should be done to make unstable system stable?
(A) The gain of the system should be decreased
(B) The gain of the system should be increased
(C) The number of zeros to the loop transfer function should be increased
(D) The number of poles to the loop transfer function should be decreased
12. Derivative output compensation
(A) reduction in settling time.
(B) high pass filter.
(C) increase the damping coefficient.
(D) decrease the speed of response of system.

Answer Key

1. (A), (B), (D)
2. (A), (B)
3. (A), (B), (D)
4. (A), (C)
5. (A), (B), (D)
6. (A), (B), (D)
7. (A), (B), (C)

8. (A), (C), (D)

9. (B), (C), (D)

10. (A), (C), (D)

11. (B), (D)

12. (A), (B), (C)