Fill in the blanks

Q.1 The real stirrer tank reactor can be represented by model proposed by.............. .

Q.2 The method of least square is minimizing the sum of the .... errors.

Q.3 The error regression can be quantified by a ....errors of estimated.

Q.4 Steam economy in evaporator systems often increases by ....the no. of effect.

Q.5 Steam economy often in evaporator systems increases with the ....of feed temperature.

Q.6 In the total condenser the overfed vapor leaving the top stage is ....condensed to give a distillate product and liquid reflux.

Q.7 Sujata's method is sometimes called ....method.

Q.8 Multiband adiabatic reactor with intermediate heat exchanger lead to ....temperature profile.

Q.9 Fixed bed reactor are essentially described by..................... models.

Q.10 The characteristic and behavior of a fluidized bed are strongly................... on the both the solid and liquid or gas.

Answer

1. Cholette and clouteir
2. squares
3. standard deviation
4. increase
5. increase
6. total
7. sum rates
8. saw tooth
9. continuum
10. dependent

Q3. What are the four methods to convert information diagram to numerical form?

Q4. How may columns constructed in stream connection method?

Q5. Which matrixes are used to be used for separating the serial and real sets?

Q6.What are the two type of systems for the for the formation of mathematical model ? Also give examples.

Q7. Classify the three type of mathematical model using deterministic approach?

Q8. Give the example of multiple gradient mathematical model?

Q9. What are the alternate classification of transport phenomena models?

Q10. What are the types of flow pattern in process vessels?

Q11. How will you detect the dead space and bypassing in closed process vessels?

Q12. How will you measure the age distribution function in a closed vessel experimentally?

Q13. How do you calculate the goodness of fit of a polynomial expression?

Q14. What are the different types of arrangement in a multiple effect evaporator?

Q15. How to define the boiling point rise in aqueous solution the evaporator?

Q16.How will you form mathematical model of separation processes like distillation column, strippers etc. ?

Q17. How do you define the degree of freedom?

Q18. Name the two key components?

Q19. Which type of condenser is recomended for reflux drum pressure from 1.48 MPa to 2.52 MPa?

Q20. Which equation is used to calculate the minimum number of stages in multi-component distillation column?

Q21. Which equation is used for calculating minimum reflux ratio?

Q22. Which equation is used to find the feed plate in multiple component distillation?

Q23. Define the stripping factor with formula?

Q24. Which method is used to calculate the component flow rate from tridiagonal matrix in material balance and equilibrium equations in separation processes?

Q25. What is the necessary condition for a flash to occur?

Q26.How many different kind of models can describe psuedo-homogeneous models for a fixed bed reactor?

Q27.Which equation is used to calculate minimum fluidization velocity?

Q28. The single parameter model proposed for describing non-ideal flow is the model?

Q 29 Which of the following is the most suitable for very high pressure gas phase reaction?

   A) CSTR

   B) PFR

Q 30. What is the generalize equilibrium relationships for multicompents mixers?

Answers

Ans 3. There are four methods to convert the information diagram to numerical form

   a) Process matrix form

   b) Stream connection method

   c) The incident matrix method

   d)Adjacent matrix method

Ans 4. 3

Ans 5. a)Process matrix

        b)Adjancy matrix

Ans 6. a)Lumped parameter-eg.Non Isothermal CSTR

        b)Distributed System -eg Non plug flow system

Ans7. a)Transport Phenomena models

        b)Population Balance models

        c)Empirical models

Ans 8. A tubular reactor in which reaction takes place.

Ans 9.a)Deterministic vs Probabilistic

        b)Linear vs Non Linear

c)Steady State vs Unsteady State

d)Lumped parameter vs Distributed parameter

Ans 10. a)Plug flow pattern b)back mix flow pattern

Ans 11. By intensity function

Ans 12. By using stimulus response technique and using some sort of tracer material.

Ans13. $r^2=(s_t-s_r/s_t)*100$

Ans 14. a) Forward b) Backward c)Mixed

Ans 15. BPR is a function of solute concentration and saturation temperature of solution.

Ans16.By writing four mathematical balance equations

a)Mass balance

b)Equilibrium relationships

c)Sum Equation

d)Energy Balance

Ans 17. Total no variables-total no. of relation equations

Ans 18. a)Heavy key-less volatile b)Light key-more volatile.

Ans19. Partial condenser

Ans 20. Fenske Equation

Ans 21. Underwood Equation

Ans 22. Kirkbridge Equation

Ans 23. S=KV/L

Ans 24. Thomas Algorithm

Ans25. $T_{BT}<T_F<T_{DP}$

Ans 26. a)Basic 1-D model   b)1-D with axial dispersion   c)2-D with velocity profile

d) 2-D with voidage and velocity profile

Ans 27. Ergun's Equation

Ans 28. A) tank in series

B) dispersion

Ans 29. PFR

Ans 30. Partial free molar energy of vapor and liquid phase are equal i.e fugacities of component i in the vapor and liquid phases.