ANSWERS TO EXAMINATION QUESTIONS

Ans 1. 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 2. Three

Ans 3. a) Process matrix

b) Adjacency matrix

Ans 4. a) Lumped parameter- e.g. Non-Isothermal CSTR

b) Distributed System - e.g. Non plug flow system

Ans 5. a) Transport Phenomena models

b) Population Balance models

c) Empirical models

Ans 6. A tubular reactor in which reactions take place.

Ans 7. a) Deterministic vs Probabilistic

b) Linear vs Non-Linear

c) Steady State vs Unsteady State

d) Lumped parameter vs Distributed parameter

Ans 8. a) Plug flow pattern

b) back mix flow pattern

Ans 9. By intensity function

Ans 10. By using stimulus response technique and using some sort of tracer material.

Ans 11. r2=(st-sr/st)*100

Ans 12. a) Forward

b) Backward

c) Mixed

Ans 13. BPR is a function of solute concentration and saturation temperature of solution.

Ans14. By writing four mathematical balance equations

a) Mass balance

b) Equilibrium relationships

c) Sum Equation

d) Energy Balance

Ans 15. Total number of variables - total number of relation equations

Ans 16. a) Heavy key-less volatile

b) Light key-more volatile.

Ans 17. Partial condenser

Ans 18. Fenske Equation

Ans 19. Underwood Equation

Ans 20. Kirk-bridge Equation

Ans 21. S=KV/L

Ans 22. Thomas Algorithm

Ans 23. TBT<TF<TDP

Ans 24. 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 25. Ergun's Equation