CHE 4253

Chemical Engineering Process Design and Safety, Fall 2018

TEST 2- Part II

Multiple Choice part: (20 minutes total)(10 points each)

1) Rotary pumps

A Have rotating casings.
B Have cavitation problems
C Have reduced outlet pressure.
D None of the listed

2) Centrifugal Pumps

A Work well with viscous fluids
B Handle only small flows
C Cavitate when flow is too large.
D None of the listed

3) Total Dynamic Head of a pump is

A Discharge pressure minus vapor pressure of liquid.
B Discharge head minus height location of the pump
C Discharge pressure minus suction pressure
D Inlet pressure minus vapor pressure.
E None of the above

4) Hydraulic power of a pump is equal to

A Mass flowrate times discharge pressure
B Mass flowrate times total dynamic head
C Volumetric Flowrate times inlet pressure
D Mass flowrate divided by pressure increase
E None of the listed

5) NPHSA is

A Given by the manufacturer
B Independent of suction pressure.
C Suction head minus Vapor pressure
D Only used when the pump is below ground level (in a hole).
E None of the listed

6) NPHSR

A Is the difference between discharge head and vapor pressure head
B Is only used for gear pumps
C Has to be negative.
D None of the listed

7) Two equal pumps in series

A Have the same head than the same two pumps in paralell
B Have half the head of the same two pumps in parallel.
C Have larger NPHSR
D None of the listed

8) NPHSA is calculated using

A outlet pump conditions
B the dew point of the fluid
C The initial pressure of the inlet pump pipe divided by length.
D None of the listed

9) Check valves

A Allow reversal flow
B Are used for flow control
C Prevent cavitation
D None of the listed

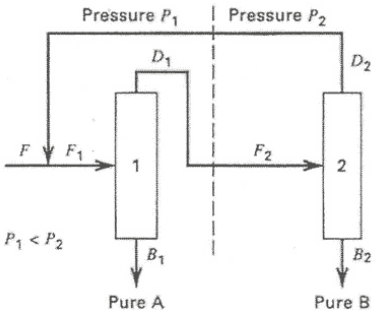
10) In Flash design, the balance of forces considered is

A gravity vs. buoyancy only
B buoyancy vs. drag force only
D drag force vs gravity only
D None of the above

11) The velocity used to obtain a column diameter

A Is the flooding velocity.
B Is 20% higher than the flooding velocity
C Is smaller than the flooding velocity
D None of the listed.

12) The following picture



A Is a petlyuk set of columns
B Is a direct sequence
C Is a double effect distillation design
D None of the listed.

13) **The following formula** $$g(Z_2 - Z_1) + \left(\frac{p_2}{\rho_2} - \frac{p_1}{\rho_1}\right) + \left(\frac{V_2^2 - V_1^2}{2}\right) = \Delta W_o - \sum F$$

A Is for gases and liquids
B Is derived from the Navier Stokes equation
C Is a total energy balance.
D None of the listed.