University of Mumbai
Online Examination 2020
Program: BE Chemical Engineering
Curriculum Scheme: Revised 2016
Examination: Fourth Year Semester VII
Course Code: CHC 702
Course Name: Process Engineering

Time: 1 Hour Max. Marks: 50

Note to the Students: All Questions are compulsory and carry equal marks.

Q.1.	Patent protection lasts for ----- years from the filing date of the patent.
Option A:	5 years
Option B:	10 years
Option C:	15 years
Option D:	20 years
Q.2.	Fluctuation in the operating conditions of the process can be avoided by adding proper---------- system to the process.
Option A:	Utility
Option B:	Piping
Option C:	Control
Option D:	Separation
Q.3.	P&ID stands for
Option A:	Process and Instrumentation diagram
Option B:	Process and Information diagram
Option C:	Piping and Information diagram
Option D:	Piping and Instrumentation diagram
Q.4.	What is capacity of pump means?
Option A:	Flow rate of fluid created by pump
Option B:	Total head
Option C:	Power of the pump
Option D:	Efficiency of the pump
Q.5.	Find the outlet temperature of gas from a compressor if its inlet temperature is 26.7 °C, specific heat ratio 1.31 and compression ratio is 4.01
Option A:	150°C
Option B:	110°C
Option C:	143.3°C
Option D:	149.5°C
Q.6.	For safe operation of the pump important requirement is
Option A:	$(NPSHA)_A \geq (NPSHA)_R$

Option B:	$(NPSHA)_A < (NPSHA)_R$
Option C:	$(NPSHA)_A = 0$
Option D:	$(NPSHA)_A\ (NPSHA)_R = 0$
Q.7.	$(NPSH)_A$ should be greater than zero to avoid _____
Option A:	Flooding
Option B:	Cavitation
Option C:	Weeping
Option D:	Priming
Q.8.	Find the pressure drop due to fitting with K factor (equivalent number of velocity head) 0.24 for a fluid with density 1.609 $kg/m^3$and velocity 20 m/s flowing in pipe.
Option A:	77.25 pa
Option B:	80 Pa
Option C:	84.69 Pa
Option D:	71.35 Pa
Q.9.	While designing distillation column, vapor liquid equilibrium (VLE) data can be generated using _____
Option A:	Boyle's law
Option B:	Charles' law
Option C:	Raoult's law
Option D:	Henry's law
Q.10.	In distillation operation, due to low value for vapour velocity, liquid rain down through perforations; this phenomenon is known as_____
Option A:	Flooding
Option B:	Entrainment
Option C:	Channeling
Option D:	Weeping
Q.11.	A saturated liquid containing components P, Q, R and S with 40, 10, 25 and 25 mole% respectively is fractionated in distillation column. The average relative volatilities of P, Q, R and S with respect to heavy key component in mixture are 2, 1.6, 1 and 0.6 respectively. The value of constatnt in Underwood's equation is 1.2. Then identify the feed condition.
Option A:	Saturated vapor
Option B:	Partialy vaporized
Option C:	Saturated liquid
Option D:	Cold liquid
Q.12.	Increase in number of trays in distillation column _____
Option A:	Increases reflux ratio
Option B:	Decreases reflux ratio
Option C:	Does not affect reflux ratio
Option D:	Increases or decreases reflux ratio
Q.13.	If recovery of light key component in distillate is 0.9, then recovery of lighter than light key component in distillate will be _____
Option A:	More than 0.9

Option B:	Less than 0.9
Option C:	Equal to 0.9
Option D:	Equal to 0
Q.14.	As per thumb rule, absorption factor for key component is generally taken as _____
Option A:	1
Option B:	1.25
Option C:	1.4
Option D:	0.75
Q.15.	If flow rate of solvent required in absorber is 14 mol/s, vapour pressure of key component to be absorbed is 0.5 bar, operating pressure in column is 10 bar, and absorption factor for key component is 1.4, then flow rate of gaseous feed entering the absorber will be _____mol/s.
Option A:	100
Option B:	200
Option C:	50
Option D:	150
Q.16.	To increase the absorption factor, (where, G = gas flow rate, S = solvent flow rate):
Option A:	Increase both 'G' and 'S'
Option B:	Decrease both 'G' and 'S'
Option C:	Increase 'S' and decrease 'G'
Option D:	Increase 'G' and decrease 'S'
Q.17.	Technically, the absorption operation is opposite to _____ operation.
Option A:	Stripping
Option B:	Flash
Option C:	Distillation
Option D:	Adsorption
Q.18.	Pick out the wrong statement:
Option A:	A catalyst is specific in reaction
Option B:	A catalyst ideally remains unchanged in chemical composition at the end the reaction
Option C:	A catalyst initiates a reaction
Option D:	A catalyst does not alter the final position of equilibrium in a reversible reaction
Q.19.	In gas – liquid reactor, equilibrium conditions at interface can be described by ------
Option A:	Boyle's Law
Option B:	Henry's law
Option C:	Raoult's ;aw
Option D:	Charle's law
Q.20.	As a safety factor one should choose the vessel (Gauge) pressure to be ___ percent higher than the actual processes pressure from mass and energy balance.
Option A:	10
Option B:	20
Option C:	50
Option D:	90

Q.21.	Choose correct one
Option A:	For fixed number of compressors, it can be shown that the minimum work occurs when all compression ratios are equal.
Option B:	For fixed number of compressors, it can be shown that the minimum work occurs when all compression ratios are not equal.
Option C:	For different number of compressors, it can be shown that the minimum work occurs when all compression ratios are equal.
Option D:	For fixed number of compressors, it can be shown that the maximum work occurs when all compression ratios are equal
Q.22.	If a process equipment has base cost (BC) of Rs. 200000, material & pressure factor of 1, and module factor of 4.23, then what is the present bare module cost (BMC) of this equipment if present and base cost index value are 359 and 115 respectively?
Option A:	Rs. 846000
Option B:	Rs. 2640991
Option C:	Rs. 500000
Option D:	Rs. 489256
Q.23.	MPF is
Option A:	Module pressure factor
Option B:	Material and pressure factor
Option C:	Modular pressure function
Option D:	Material pressure function
Q.24.	Stirred tank reactors can be operated in_____
Option A:	Batch mode only
Option B:	Semi batch mode only
Option C:	Continuous mode only
Option D:	Batch, semi batch or continuous mode
Q.25.	Heating and cooling utility requirement of process can be evaluated by carrying out_____ around/of the process.
Option A:	Material balance
Option B:	Safety analysis
Option C:	Energy balance
Option D:	Cost estimation