

# Telangana State Council Higher Education

## Notations :

- 1.Options shown in green color and with ✓ icon are correct.
- 2.Options shown in red color and with ✗ icon are incorrect.

<b>Question Paper Name :</b>	Chemical Engineering 21st Sept 2020 Shift 1
<b>Subject Name :</b>	Chemical Engineering
<b>Creation Date :</b>	2020-09-21 14:47:25
<b>Duration :</b>	120
<b>Total Marks :</b>	120
<b>Display Marks:</b>	No
<b>Share Answer Key With Delivery Engine :</b>	Yes
<b>Actual Answer Key :</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console? :</b>	Yes

## Chemical Engineering

<b>Group Number :</b>	1
<b>Group Id :</b>	88039681
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120

Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	120
Is this Group for Examiner? :	No

## Mathematics

Section Id :	880396148
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	880396148
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 8803969601 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The particular integral of  $y'' + y' + y = x^2 + x + 1$  is  $y(x) =$

Options :

88039638401. ✓  $x^3 - x$

88039638402. ✗  $x^3 + x$

88039638403. ✗  $x^2 - x$

88039638404. ✖  $x^2 + x$

**Question Number : 2 Question Id : 8803969602 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The general solution  $y'' + 2y' + y = e^x$  is

Options :

88039638405. ✔  $y(x) = (a + bx)e^{-x} + \frac{e^x}{4}$

88039638406. ✖  $y(x) = (a + bx)e^x + \frac{e^x}{4}$

88039638407. ✖  $y(x) = (a + bx)e^{-x} + \frac{e^x}{2}$

88039638408. ✖  $y(x) = (a + bx)e^x + \frac{e^x}{2}$

**Question Number : 3 Question Id : 8803969603 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The number of solution of the system of equations  
 $x - y + 2z = 6, 2x + y - z = 4, 4x - y + 3z = 16$  is

Options :

88039638409. ✖ 0

88039638410. ✖ 1

88039638411. ✖ 2

88039638412. ✔ infinite

**Question Number : 4 Question Id : 8803969604 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

$$z = (y - 2x)^3 + \sin(y - 2x) + \tan^{-1}(y + 2x)^3 \Rightarrow \frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial y^2} =$$

**Options :**

88039638413. ✖ 3z

88039638414. ✖ 2z

88039638415. ✖ z

88039638416. ✔ 0

**Question Number : 5 Question Id : 8803969605 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

$$\text{If } \int_1^2 \int_2^3 (\cos x)y^2 dy dx = k((\sin(2) - \sin(1))), \text{ then } k =$$

**Options :**

88039638417. ✖  $\frac{16}{3}$

88039638418. ✖  $\frac{17}{3}$

88039638419. ✔  $\frac{19}{3}$

88039638420. ✖  $\frac{20}{3}$

**Question Number : 6 Question Id : 8803969606 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Divergence of  $(x - e^y, z + \cos y, z^3 - x)$  is  $1 - \sin y + f(z)$ , where  $f(z) =$

**Options :**

88039638421. ✔  $3z^2$

88039638422. ✖  $3z$

88039638423. ✖  $3z^3$

88039638424. ✖  $2z^2$

**Question Number : 7 Question Id : 8803969607 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

Correct Marks : 1 Wrong Marks : 0

$$\oint_{|z-2i|=1} \frac{dz}{(z^2+4)^2} =$$

Options :

88039638425. ✘  $\frac{\pi}{4}$

88039638426. ✘  $\frac{\pi}{8}$

88039638427. ✔  $\frac{\pi}{16}$

88039638428. ✘  $\frac{\pi}{32}$

Question Number : 8 Question Id : 8803969608 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Solving  $x \cos x = 0$  by the Newton's iteration method yields  $x_{n+1} - x_n =$

Options :

88039638429. ✔  $\frac{x_n \cos x_n}{x_n \sin x_n - \cos x_n}$

88039638430. ✘  $\frac{x_n \cos x_n}{x_n \cos x_n - \sin x_n}$

88039638431. ✘  $\frac{x_n \cos x_n}{x_n \sin x_n + \cos x_n}$

88039638432. ✘  $\frac{x_n \cos x_n}{x_n \cos x_n + \sin x_n}$

**Question Number : 9 Question Id : 8803969609 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The probability that a randomly chosen number from 1 to 100 a prime is

Options :

88039638433. ✘  $\frac{5}{8}$

88039638434. ✘  $\frac{3}{8}$

88039638435. ✘  $\frac{1}{8}$

88039638436. ✔  $\frac{1}{4}$

**Question Number : 10 Question Id : 8803969610 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Three numbers are chosen at random from  $\{1, 2, 3, \dots, 30\}$ . The probability that they are consecutive is

Options :

88039638437. ✓  $1 - \frac{27}{30C_3}$

88039638438. ✗  $1 - \frac{26}{30C_3}$

88039638439. ✗  $1 - \frac{25}{30C_3}$

88039638440. ✗  $1 - \frac{24}{30C_3}$

## Chemical Engineering

Section Id :	880396149
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1

Sub-Section Id :

880396149

Question Shuffling Allowed :

Yes

Question Number : 11 Question Id : 8803969611 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fat splitting catalyst is

Options :

88039638441. ✘  $\text{CaCO}_3$

88039638442. ✔  $\text{ZnO}$

88039638443. ✘  $\text{Al}_2\text{O}_3$

88039638444. ✘  $\text{Fe}$

Question Number : 12 Question Id : 8803969612 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Synthesis gas is a mixture of

Options :

88039638445. ✔  $\text{CO}$  and  $\text{H}_2$

88039638446. ✘  $\text{N}_2$  and  $\text{H}_2$

88039638447. ✘  $\text{N}_2$ ,  $\text{CH}_4$  and  $\text{CO}$

88039638448. ✘  $\text{CO}_2$  and  $\text{H}_2$

Question Number : 13 Question Id : 8803969613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Nylon-66 is manufactured from

Options :

- 88039638449. ✓ Hexamethylene Diamine and Adipic acid
- 88039638450. ✗ Hexamethylene Diamine and Maleic anhydride
- 88039638451. ✗ Caprolactam
- 88039638452. ✗ Dimethyl Terephthalate and Ethylene Glycol

Question Number : 14 Question Id : 8803969614 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A perfect gas at  $27^{\circ}\text{C}$  is heated at constant pressure till its volume is double. The final temperature is

Options :

- 88039638453. ✗  $54^{\circ}\text{C}$
- 88039638454. ✓  $327^{\circ}\text{C}$
- 88039638455. ✗  $108^{\circ}\text{C}$
- 88039638456. ✗  $600^{\circ}\text{C}$

Question Number : 15 Question Id : 8803969615 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Zeroth law of thermodynamics

**Options :**

88039638457. ✘ Deals with conversion of mass and energy

88039638458. ✘ Deals with reversibility and irreversibility of process

88039638459. ✘ Deals with heat engines

88039638460. ✔

States that if two systems are both in equilibrium with a third system, they are in thermal equilibrium with each other

**Question Number : 16 Question Id : 8803969616 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question**

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The enthalpy of reaction  $\Delta H$ , for a reaction occurring at constant pressure that does expansion work is given by (Assuming all terms have usual meanings)

**Options :**

88039638461. ✘  $\Delta H = \Delta U$

88039638462. ✔  $\Delta H = \Delta U + P\Delta V$

88039638463. ✘  $\Delta H = \Delta G - T\Delta S$

88039638464. ✘  $\Delta H = Q + W$

Question Number : 17 Question Id : 8803969617 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A car engine operates with a thermal efficiency of 35%. Assume the air-conditioner has a coefficient of performance of 3 working as a refrigerator cooling the inside using engine shaft work to drive it. How much fuel energy should be spent extra to remove 1.0 kJ from the inside?

Options :

88039638465. ✘ 0.652 kJ

88039638466. ✘ 0.752 kJ

88039638467. ✔ 0.952 kJ

88039638468. ✘ 0.852 kJ

Question Number : 18 Question Id : 8803969618 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The species, which by definition has zero standard molar enthalpy of formation at 298 K, is

Options :

88039638469. ✘ Br<sub>2</sub>(g)

88039638470. ✔ Cl<sub>2</sub>(g)

88039638471. ✖  $\text{H}_2\text{O}(\text{g})$

88039638472. ✖  $\text{CH}_4(\text{g})$

Question Number : 19 Question Id : 8803969619 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The standard entropies of  $\text{CO}_2(\text{g})$ ,  $\text{C}(\text{s})$  and  $\text{O}_2(\text{g})$  are  $213.5$ ,  $5.740$  and  $205 \text{ JK}^{-1}$  respectively. The standard entropy of formation of  $\text{CO}_2$  is

Options :

88039638473. ✔  $2.76 \text{ JK}^{-1}$

88039638474. ✖  $2.12 \text{ JK}^{-1}$

88039638475. ✖  $1.12 \text{ JK}^{-1}$

88039638476. ✖  $1.40 \text{ JK}^{-1}$

Question Number : 20 Question Id : 8803969620 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A solution of specific gravity 1.0 consists of 35% 'A' by weight and the remaining 'B'. If the specific gravity of 'A' is 0.7, the specific gravity of 'B' is

Options :

88039638477. ✖ 1.25

88039638478. ✓ 1.3

88039638479. ✗ 0.25

88039638480. ✗ 1.2

**Question Number : 21 Question Id : 8803969621 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

At a given temperature and pressure, a liquid mixture of benzene and toluene is in equilibrium with its vapour. The available degree(s) of freedom is (are)

**Options :**

88039638481. ✓ zero

88039638482. ✗ 1

88039638483. ✗ 2

88039638484. ✗ 3

**Question Number : 22 Question Id : 8803969622 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

If the block gets a height of 0.2 m using some of the kinetic energy, what is the kinetic energy of the block after reaching the extreme point?

**Options :**

88039638485. ✘ 0.01 J

88039638486. ✘ 0.02 J

88039638487. ✘ 0.03 J

88039638488. ✔ 0.04 J

Question Number : 23 Question Id : 8803969623 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Remote control valve is a \_\_\_\_\_ valve.

Options :

88039638489. ✘ Gate

88039638490. ✘ Needle

88039638491. ✔ Butterfly

88039638492. ✘ Globe

Question Number : 24 Question Id : 8803969624 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For turbulent flow of an incompressible fluid through a pipe, the flow rate 'Q' is proportional to  $(\Delta P)^n$ , where  $\Delta P$  is the pressure drop. The value of exponent 'n' is

Options :

88039638493. ✘ 1

88039638494. ✘ 0

88039638495. ✔ <1

88039638496. ✘ >1

Question Number : 25 Question Id : 8803969625 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The ratio of the velocity at the axis of the pipe to the mean velocity of flow in case of pipe flow under viscous condition is

Options :

88039638497. ✘ 0.5

88039638498. ✘ 0.67

88039638499. ✘ 1

88039638500. ✔ 2

Question Number : 26 Question Id : 8803969626 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The rise in the level of a liquid in a tube is 'h'. If half the amount is poured outside, what will be the new rise in liquid level?

Options :

88039638501. ✘ 0

88039638502. ✘  $\frac{h}{2}$

88039638503. ✔ h

88039638504. ✘ 2h

Question Number : 27 Question Id : 8803969627 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The absolute pressure of water is 0.5 kN above its vapour pressure. If it flows with a velocity of 1 m/s, what will be the value of Cavitation Number describing the flow induced boiling?

Options :

88039638505. ✘ 0.25

88039638506. ✘ 0.5

88039638507. ✔ 1

88039638508. ✖ 2

**Question Number : 28 Question Id : 8803969628 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

If a mass of 1000 kg of liquid occupies a volume of one cubic meter, then 1 represents which among the following?

**Options :**

88039638509. ✖ Specific Density

88039638510. ✖ Specific Weight

88039638511. ✔ Specific Gravity

88039638512. ✖ Specific Mass

**Question Number : 29 Question Id : 8803969629 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

In centrifugal pumps, cavitation occurs, when pressure of the impeller eye or vane becomes

**Options :**

88039638513. ✖ Less than atmospheric pressure

88039638514. ✖ More than liquid vapor pressure

88039638515. ✓ Less than liquid vapor pressure

88039638516. ✗ More than atmospheric pressure

Question Number : 30 Question Id : 8803969630 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The velocity of a point in a flow is

Options :

88039638517. ✗ Along the streamline

88039638518. ✓ Tangent to the streamline

88039638519. ✗ Along the path line

88039638520. ✗ Tangent to the path line

Question Number : 31 Question Id : 8803969631 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Bernoulli's equation in fluid dynamics is valid for

Options :

88039638521. ✗ Compressible flows

88039638522. ✗ Transient flows

88039638523. ✓ Continuous flows

88039638524. ✖ Viscous flows

Question Number : 32 Question Id : 8803969632 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Coefficient of friction of a laminar flow is

Options :

88039638525. ✖  $\frac{Re}{16}$

88039638526. ✖  $\frac{Re}{64}$

88039638527. ✔  $\frac{16}{Re}$

88039638528. ✖  $\frac{64}{Re}$

Question Number : 33 Question Id : 8803969633 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The ratio of shear stress to shear strain is called

Options :

88039638529. ✖ Bulk modulus

88039638530. ✖ Shear modulus

88039638531. ✓ Modulus of rigidity

88039638532. ✘ Modulus of elasticity

Question Number : 34 Question Id : 8803969634 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Prandtl Number is

Options :

88039638533. ✓ Momentum diffusivity to Thermal diffusivity

88039638534. ✘ Thermal diffusivity to Momentum diffusivity

88039638535. ✘ Shear stress to Thermal diffusivity

88039638536. ✘ Thermal diffusivity to Kinematic viscosity

Question Number : 35 Question Id : 8803969635 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What does the following represents?

$$-\frac{dm}{dt} = -DA \frac{dc}{dx}$$

Options :

88039638537. ✘ Fourier's law

88039638538. ✓ Fick's law

88039638539. ✘ Newton's law

88039638540. ✘ Radiation law

**Question Number : 36 Question Id : 8803969636 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

When heat is transferred from hot body to cold body, in a straight line, without affecting the intervening medium, the heat transfer is known as

**Options :**

88039638541. ✘ Conduction

88039638542. ✘ Convection

88039638543. ✓ Radiation

88039638544. ✘ Conduction and convection

**Question Number : 37 Question Id : 8803969637 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A liquid is heated by passing it through a circular pipe ( $k_{\text{pipe}} = 15 \text{ W/mK}$ , viscosity =  $2.5 \times 10^{-5} \text{ Pa-s}$ ,  $C_p = 1000 \text{ J/kg-K}$ ,  $k_{\text{liquid}} = 0.035 \text{ W/mK}$ ) of ID = 25 mm and OD = 30 mm with length  $L = 15 \text{ m}$ . If the Reynolds No. is 79000, what is the outer surface average heat transfer coefficient?

Options :

88039638545. ✘ 773 kW/m<sup>2</sup>K

88039638546. ✔ 83 kW/m<sup>2</sup>K

88039638547. ✘ 104 kW/m<sup>2</sup>K

88039638548. ✘ 43 kW/m<sup>2</sup>K

Question Number : 38 Question Id : 8803969638 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Unsteady state heat conduction occurs, when

Options :

88039638549. ✘ Temperature distribution is independent of time

88039638550. ✔ Temperature distribution is dependent on time

88039638551. ✘ Heat flows in one direction only

88039638552. ✘ Three dimensional heat flow is concerned

Question Number : 39 Question Id : 8803969639 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical  
Correct Marks : 1 Wrong Marks : 0

A Dephlegmator is a

Options :

88039638553. ✘ Total condenser

88039638554. ✘ Vacuum evaporator

88039638555. ✔ Partial condenser

88039638556. ✘ Double pipe heat exchanger

Question Number : 40 Question Id : 8803969640 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical  
Correct Marks : 1 Wrong Marks : 0

Duhring's rule states that at the same pressure, the boiling point of a solution is a linear function of the \_\_\_\_\_ of pure water.

Options :

88039638557. ✔ Boiling point

88039638558. ✘ Dynamic viscosity

88039638559. ✘ Kinematic viscosity

88039638560. ✖ Density

**Question Number : 41 Question Id : 8803969641 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The mass flow rate of the heating steam is \_\_\_\_\_, when the internal energy is 500 J, area is 2 m<sup>2</sup>, temperature driving force is 30°C and latent heat of vaporization is 1000 J.

**Options :**

88039638561. ✖ 2 kg

88039638562. ✖ 3 kg

88039638563. ✖ 20 kg

88039638564. ✔ 30 kg

**Question Number : 42 Question Id : 8803969642 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

An evaporator while concentrating an aqueous solution from 10 to 40% solids evaporates 30000 kg of water. The amount of solids handled by the system is

**Options :**

88039638565. ✔ 4000 kg

88039638566. ✖ 9000 kg

88039638567. ✘ 4600 kg

88039638568. ✘ 3000 kg

**Question Number : 43 Question Id : 8803969643 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

40% of incident radiant energy on the surface of a thermally transparent body is reflected back. If the transmissivity of the body be 0.15, then the emissivity of surface is

**Options :**

88039638569. ✔ 0.45

88039638570. ✘ 0.55

88039638571. ✘ 0.40

88039638572. ✘ 0.75

**Question Number : 44 Question Id : 8803969644 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The most commonly used leaching solvent in vegetable oil industry is

**Options :**

88039638573. ✘ Phenol

88039638574. ✔ Hexane

88039638575. ✖ Furfurol

88039638576. ✖ Liquid SO<sub>2</sub>

Question Number : 45 Question Id : 8803969645 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Height of a Transfer Unit (HTU) if gas rate is 0.07 kmol/sq.m s and the F-type mass transfer co-efficient is 0.06 kmol/ cu.m s is

Options :

88039638577. ✔ 1.167

88039638578. ✖ 0.85

88039638579. ✖ 0.042

88039638580. ✖ 0.0031

Question Number : 46 Question Id : 8803969646 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the gas phase composition of a component 'A' is 0.65 and its relative volatility is 2, then the liquid phase composition is

Options :

88039638581. ✖ 0.78

88039638582. ✖ 0.68

88039638583. ✖ 0.58

88039638584. ✔ 0.48

**Question Number : 47 Question Id : 8803969647 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The ratio of distillate to residual flow rates if a binary mixture containing 65% of more volatile component while the distillate and the residue compositions are 90% and 30% respectively is

**Options :**

88039638585. ✖ 0.4

88039638586. ✔ 1.4

88039638587. ✖ 2.4

88039638588. ✖ 3.4

**Question Number : 48 Question Id : 8803969648 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

The distribution coefficient, if the equilibrium solute concentration in extract is 0.75 and the solute concentration in Raffinate is 0.6 is

Options :

88039638589. ✓ 1.25

88039638590. ✗ 0.8

88039638591. ✗ 1

88039638592. ✗ 0

Question Number : 49 Question Id : 8803969649 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The gas phase mass transfer co-efficient for an unbound moisture to remove if the flux is 5 kg/sq.m sec and the difference in humidity of the liquid and the main stream is 0.5 units is

Options :

88039638593. ✗ 5

88039638594. ✓ 10

88039638595. ✗ 20

88039638596. ✗ 30

Question Number : 50 Question Id : 8803969650 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The weight of the wet solid is 5 kg and the product of area and the constant rate is 0.5 kg/min. The time taken to dry 50% to 40% of moisture (dry basis), if critical moisture content is 30% is

Options :

88039638597. ✖ 20 sec

88039638598. ✖ 40 sec

88039638599. ✔ 60 sec

88039638600. ✖ 80 sec

Question Number : 51 Question Id : 8803969651 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Conversion of 80% of moisture in wet basis to dry basis (kg water / kg dry solid) is

Options :

88039638601. ✔ 4

88039638602. ✖ 8

88039638603. ✖ 12

88039638604. ✖ 16

Question Number : 52 Question Id : 8803969652 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The additional operation required for drying gas and liquid is

Options :

88039638605. ✓ Absorption

88039638606. ✗ Adsorption

88039638607. ✗ Humidification

88039638608. ✗ De-humidification

Question Number : 53 Question Id : 8803969653 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In order to reduce the time required for removing solute, the sugar beets are cut into slices known as

Options :

88039638609. ✗ Coset

88039638610. ✓ Cosettes

88039638611. ✗ Consot

88039638612. ✗ Cossus

Question Number : 54 Question Id : 8803969654 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

With increase in temperature, the equilibrium conversion of a reversible exothermic reaction

Options :

88039638613. ✓ Decreases

88039638614. ✗ Increases

88039638615. ✗ Remain unaffected

88039638616. ✗ Decreases linearly with temperature

Question Number : 55 Question Id : 8803969655 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The most suitable reactor for carrying out an auto-thermal reaction is

Options :

88039638617. ✗ Batch reactor

88039638618. ✓ Continuous Stirred Tank Reactor (CSTR)

88039638619. ✗ Semi-batch reactor

88039638620. ✗ Plug-flow reactor

Question Number : 56 Question Id : 8803969656 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Chemisorption is

Options :

88039638621. ✖ Same as “Van der Waals” adsorption

88039638622. ✖ Characterised by adsorption of heat

88039638623. ✔ An irreversible phenomenon

88039638624. ✖ A reversible phenomenon

**Question Number : 57 Question Id : 8803969657 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Air initially at 101.3 kPa and 40°C and with a relative humidity of 50%, is cooled at constant pressure to 30°C. The cooled air has a

**Options :**

88039638625. ✖ Higher dew point

88039638626. ✖ Higher absolute humidity

88039638627. ✔ Higher relative humidity

88039638628. ✖ Higher wet bulb temperature

**Question Number : 58 Question Id : 8803969658 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

For an air (A) water vapour (B) mixture, the partial pressure of the air is 5 Pa and the total pressure of the system is 15 Pa. The absolute humidity in mass of air/mass of water vapour is

Options :

88039638629. ✓ 0.805

88039638630. ✗ 0.311

88039638631. ✗ 0.705

88039638632. ✗ 0.411

Question Number : 59 Question Id : 8803969659 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For a gaseous phase reaction, rate of reaction is equal to  $K \cdot C_A \cdot C_B$ . If the volume of the reactor is suddenly reduced to  $1/4^{\text{th}}$  of its initial volume, then the rate of reaction compared to the original rate will be \_\_\_\_\_ times.

Options :

88039638633. ✗ 8

88039638634. ✓ 16

88039638635. ✗  $1/8$

88039638636. ✗  $1/16$

Question Number : 60 Question Id : 8803969660 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For the liquid phase zero order irreversible reaction  $A \rightarrow B$ , the conversion of A in a CSTR is found to be 0.3 at a space velocity of  $0.1 \text{ min}^{-1}$ . What will be the conversion for a PFR with a space velocity of  $0.2 \text{ min}^{-1}$ ? Assume that all the other operating conditions are the same for CSTR and PFR.

Options :

88039638637. ✘ 0.15

88039638638. ✘ 0.30

88039638639. ✔ 0.60

88039638640. ✘ 0.90

Question Number : 61 Question Id : 8803969661 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The volume occupied by 1.0 kmole of an ideal gas at 273.15 K and 101.325 kPa is

Options :

88039638641. ✔  $22.414 \text{ m}^3$

88039638642. ✘  $359 \text{ m}^3$

88039638643. ✘  $22414 \text{ m}^3$

88039638644. ✖ 35.9 m<sup>3</sup>

**Question Number : 62 Question Id : 8803969662 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

For the reversible reaction  $A \rightleftharpoons 2B$ , if the equilibrium constant  $K$  is 0.05 mole/litre; starting from initially 2 moles of 'A' and zero moles of 'B', how many moles will be formed at equilibrium?

**Options :**

88039638645. ✖ 0.253

88039638646. ✔ 0.338

88039638647. ✖ 0.152

88039638648. ✖ 0.637

**Question Number : 63 Question Id : 8803969663 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A batch adiabatic reactor at an initial temperature of 373°K is being used for the reaction,  $A \rightarrow B$ . Assume the heat of reaction is - 1 kJ/mole at 373°K and heat capacity of both A and B to be constant and equal to 50 J/mole.K. The temperature rise after a conversion of 0.5 will be

**Options :**

88039638649. ✘ 5°C

88039638650. ✔ 10°C

88039638651. ✘ 20°C

88039638652. ✘ 100°C

**Question Number : 64 Question Id : 8803969664 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following is a controlling factor in very fast heterogeneous reaction?

**Options :**

88039638653. ✔ Heat and mass transfer effects

88039638654. ✘ Pressure

88039638655. ✘ Temperature

88039638656. ✘ Composition of reactant

**Question Number : 65 Question Id : 8803969665 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following IR radiation is used in measuring relative humidity?

**Options :**

88039638657. ✘ Wavelength of less than  $1\mu\text{m}$
88039638658. ✔ Wavelength less than  $3\mu\text{m}$
88039638659. ✘ Wavelength greater than  $10\mu\text{m}$
88039638660. ✘ Wavelength of any value

Question Number : 66 Question Id : 8803969666 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A first order system with unity gain and time constant  $\tau$  is subjected to a sinusoidal input of frequency  $\omega = 1/\tau$ . The amplitude ratio for this system is

Options :

88039638661. ✘ 1
88039638662. ✘ 0.5
88039638663. ✔  $\frac{1}{\sqrt{2}}$
88039638664. ✘ 0.25

Question Number : 67 Question Id : 8803969667 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is an analog transducer?

Options :

88039638665. ✘ Encoders

88039638666. ✔ Strain gauge

88039638667. ✘ Digital tachometers

88039638668. ✘ Limit switches

Question Number : 68 Question Id : 8803969668 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Response of a linear control system for a change in set point is called

Options :

88039638669. ✘ Frequency response

88039638670. ✘ Transient response

88039638671. ✔ Servo problem

88039638672. ✘ Regulator problem

Question Number : 69 Question Id : 8803969669 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A non-linear system will have \_\_\_\_\_ steady state values.

Options :

88039638673. ✖ Single

88039638674. ✖ Double

88039638675. ✖ Triple

88039638676. ✔ Multiple

Question Number : 70 Question Id : 8803969670 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The second order system with the transfer function  $\frac{4}{s^2 + 2s + 4}$  has a damping ratio of

Options :

88039638677. ✖ 2.0

88039638678. ✔ 0.5

88039638679. ✖ 1.0

88039638680. ✖ 4.0

Question Number : 71 Question Id : 8803969671 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The input of a controller is

Options :

88039638681. ✘ Sensed signal

88039638682. ✔ Error signal

88039638683. ✘ Desired variable value

88039638684. ✘ Signal of fixed amplitude not dependent on desired variable value

**Question Number : 72 Question Id : 8803969672 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Zero initial condition for a system implies

**Options :**

88039638685. ✘ Input reference signal is zero

88039638686. ✘ Zero stored energy

88039638687. ✘ Initial movement of moving parts

88039638688. ✔ System is at rest and no energy is stored in any of its components

**Question Number : 73 Question Id : 8803969673 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

The original boiler drum level application of feed forward control, developed in 1925

**Options :**

88039638689. ✔ Is still being applied every day

88039638690. ✘ Was abandoned because of poor measuring techniques

88039638691. ✘ Worked well only with the particular boiler for which it was originally designed

88039638692. ✘ Was immediately recognized as the ultimate control system

**Question Number : 74 Question Id : 8803969674 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

\_\_\_\_\_ tray arrangement is recommended for distillation column having diameter upto 4 ft.

**Options :**

88039638693. ✘ Radial flow

88039638694. ✔ Cross flow

88039638695. ✘ Split flow

88039638696. ✘ Cascade

**Question Number : 75 Question Id : 8803969675 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following is the cheapest material of construction for the storage of sodium hydroxide upto a concentration of 75%?

**Options :**

88039638697. ✘ Stainless steel

88039638698. ✓ Plain carbon steel

88039638699. ✗ Nickel

88039638700. ✗ Copper

**Question Number : 76 Question Id : 8803969676 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Gantt chart is helpful in

**Options :**

88039638701. ✗ Efficient utilization of manpower and machines

88039638702. ✓ Preparing production schedule

88039638703. ✗ Efficient dispatching of products

88039638704. ✗ Inventory control

**Question Number : 77 Question Id : 8803969677 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

'Six-tenth factor' rule is used for estimating the

**Options :**

88039638705. ✗ Equipment installation cost

88039638706. ✗ Cost of piping

88039638707. ✓ Equipment cost by scaling

88039638708. ✗ Utilities cost

Question Number : 78 Question Id : 8803969678 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The main purpose of providing stepping on the trays is to

Options :

88039638709. ✗ Increase the residence time

88039638710. ✗ Decrease the pressure drop

88039638711. ✓ Facilitate handling of large flow rate of liquid

88039638712. ✗ Improve the flow condition

Question Number : 79 Question Id : 8803969679 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Minimum recommended baffle spacing in a shell and tube heat exchanger is about (where,  $D$  = shell diameter)

Options :

88039638713. ✓ 0.2  $D$

88039638714. ✗ 0.5  $D$

88039638715. ✖ 0.66 D

88039638716. ✖ 0.80 D

**Question Number : 80 Question Id : 8803969680 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Floating head heat exchangers are used for the

**Options :**

88039638717. ✖ Heat transfer between corrosive fluids

88039638718. ✔ Cases where temperature difference between the shell and the tubes is more ( $>50^{\circ}\text{C}$ )

88039638719. ✖ Co-current heat transfer systems

88039638720. ✖ Counter-current heat transfer systems

**Question Number : 81 Question Id : 8803969681 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Heat transfer co-efficient for a horizontal condenser as compared to a vertical condenser operating under similar conditions is

**Options :**

88039638721. ✖ Same

88039638722. ✖ Less

88039638723. ✓ About 3 times

88039638724. ✗ About 0.33 times

Question Number : 82 Question Id : 8803969682 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A cylindrical pressure vessel of volume  $6\pi \text{ m}^3$  has to be designed to withstand a maximum internal pressure of 10 atm. The allowable design stress of the material is  $125 \text{ N/mm}^2$  and corrosion allowance is 2 mm. The thickness of the vessel for a length/diameter ratio of 3 will be close to

Options :

88039638725. ✗ 5 mm

88039638726. ✗ 6 mm

88039638727. ✗ 8 mm

88039638728. ✓ 10 mm

Question Number : 83 Question Id : 8803969683 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Double contact double absorption process is the most recent process for the manufacture of

Options :

88039638729. ✗ Nitric acid

88039638730. ✓ Sulphuric acid

88039638731. ✘ Ammonium Sulphate

88039638732. ✘ Hydrochloric acid

Question Number : 84 Question Id : 8803969684 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Cellulose is the main constituent of most \_\_\_\_\_ fibres.

Options :

88039638733. ✘ Acrylic

88039638734. ✘ Spandex

88039638735. ✘ Synthetic

88039638736. ✓ Natural

Question Number : 85 Question Id : 8803969685 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

\_\_\_\_\_ tubes are good substitute for human blood vessels on heart by-pass operation.

Options :

88039638737. ✘ PVC

88039638738. ✘ Polythene

88039638739. ✓ Teflon/Dacron

88039638740. ✘ Polystyrene

**Question Number : 86 Question Id : 8803969686 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

NPK means a \_\_\_\_\_ fertilizer.

**Options :**

88039638741. ✓ Mixed

88039638742. ✘ Potassic

88039638743. ✘ liquid

88039638744. ✘ solid

**Question Number : 87 Question Id : 8803969687 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Polyvinyl chloride is an example of \_\_\_\_\_ material.

**Options :**

88039638745. ✘ Thermosetting

88039638746. ✓ Thermoplastic

88039638747. ✖ Fibrous

88039638748. ✖ Chemically active

Question Number : 88 Question Id : 8803969688 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Catalyst used in Haber's process for ammonia production is

Options :

88039638749. ✔ Reduced iron oxide

88039638750. ✖ Nickel

88039638751. ✖ Vanadium pentoxide

88039638752. ✖ Silica gel

Question Number : 89 Question Id : 8803969689 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

During conversion of ammonium carbamate into urea, the presence of large excess of water

Options :

88039638753. ✖ Increases the yield of urea

88039638754. ✔ Adversely affects the yield of urea

88039638755. ✖ Reduces the evaporator load by diluting the urea solution

88039638756. ✖ Does not affect the yield of urea

Question Number : 90 Question Id : 8803969690 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pick out the wrong statement.

Options :

88039638757. ✔ All the nitrogenous fertilisers are not soluble in water

88039638758. ✖ A straight fertiliser contains only one nutrient

88039638759. ✖ Calcium cyanamide is used as weed killer in onion fields

88039638760. ✖ The phosphorous nutrient makes the plant stem stronger and increases its branches

Question Number : 91 Question Id : 8803969691 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is a thermodynamic property of a system?

Options :

88039638761. ✖ Concentration

88039638762. ✖ Mass

88039638763. ✘ Temperature

88039638764. ✔ Entropy

Question Number : 92 Question Id : 8803969692 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Law of corresponding states” says that

Options :

88039638765. ✔ Two different gases behave similarly, if their reduced properties (i.e. P, V and T) are same

88039638766. ✘ The surface of separation (i.e. the meniscus) between liquid and vapour phase disappears at the critical temperature

88039638767. ✘ No gas can be liquefied above the critical temperature; howsoever high the pressure may be

88039638768. ✘ The molar heat of energy of gas at constant volume should be nearly constant (about 3 calories)

Question Number : 93 Question Id : 8803969693 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

\_\_\_\_\_ is mass of a particular substance divided by the total mass of all the substances present in the mixture or solution.

Options :

88039638769. ✘ Molecular weight

88039638770. ✓ Weight fraction

88039638771. ✗ Atomic weight

88039638772. ✗ Mole fraction

**Question Number : 94 Question Id : 8803969694 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

An compressible fluid's specific gravity was measured on earth, on a planet having acceleration due to gravity 5.5 times that of earth, and in space at STP. Where is it maximum?

**Options :**

88039638773. ✗ On the earth

88039638774. ✗ On the planet

88039638775. ✗ In the space

88039638776. ✓ It will be constant everywhere

**Question Number : 95 Question Id : 8803969695 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Determine the compressibility of an incompressible fluid, if the pressure of the fluid is changed from  $70 \text{ N/m}^2$  to  $130 \text{ N/m}^2$ . The volume of the liquid changes by 0.15 percent.

**Options :**

88039638777. ✓ 0.0025 m<sup>2</sup>/N

88039638778. ✗ 0.0050 m<sup>2</sup>/N

88039638779. ✗ 0.0070 m<sup>2</sup>/N

88039638780. ✗ 0.0012 m<sup>2</sup>/N

**Question Number : 96 Question Id : 880396966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A rectangular orifice of 2 m width and 1.2 m deep is fitted in one side of large tank. The easier level on one side of the orifice is 3 m above the top edge of the orifice while on the other side of the orifice; the water level is 0.5 m below its top edge. Calculate discharge if  $C_d = 0.64$ .

**Options :**

88039638781. ✓ 4.95 m<sup>3</sup>/s

88039638782. ✗ 5.67 m<sup>3</sup>/s

88039638783. ✗ 3.56 m<sup>3</sup>/s

88039638784. ✗ 6.75 m<sup>3</sup>/s

Question Number : 97 Question Id : 8803969697 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The gross energy requirement is called as \_\_\_\_\_

Options :

- 88039638785. ✓ Work index
- 88039638786. ✘ Power index
- 88039638787. ✘ Energy index
- 88039638788. ✘ Final index

Question Number : 98 Question Id : 8803969698 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is a fine crusher?

Options :

- 88039638789. ✘ Blake jaw crusher
- 88039638790. ✘ Gyratory crusher
- 88039638791. ✓ Toothed roll crusher
- 88039638792. ✘ Dodge jaw crusher

Question Number : 99 Question Id : 8803969699 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Moore filter is a \_\_\_\_\_ filter.

**Options :**

88039638793. ✓ Leaf

88039638794. ✗ Press

88039638795. ✗ Rotary

88039638796. ✗ Sand

**Question Number : 100 Question Id : 8803969700 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question**

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Pick out the wrong statement.

**Options :**

88039638797. ✗ In case of heat transfer by purely forced convection,  $G_R/R_e^2 \leq 1$

The equivalent diameter of heat transfer for a duct of square cross-section

88039638798. ✓ (having each side as 'x') is equal to  $4x$

88039638799. ✗ Distillation process is not the same as evaporation

The effectiveness of nucleate boiling depends on the ease with which the

88039638800. ✗ bubbles are formed and detached from the heating surface

Question Number : 101 Question Id : 8803969701 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For shell and tube heat exchanger, with increasing heat transfer area, the purchased cost per unit heat transfer area

Options :

88039638801. ✘ Increases

88039638802. ✘ Decreases

88039638803. ✘ Remains constant

88039638804. ✔ Passes through a maxima

Question Number : 102 Question Id : 8803969702 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Critical thickness of insulation for sphere is given by

Options :

88039638805. ✘  $\frac{2h}{k}$

88039638806. ✘  $\frac{h}{k}$

88039638807. ✔  $\frac{2k}{h}$

88039638808. ✘  $\frac{k}{2h}$

**Question Number : 103 Question Id : 8803969703 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

A hot body will radiate heat most rapidly, if its surface is

**Options :**

88039638809. ✘ White & rough

88039638810. ✔ Black & rough

88039638811. ✘ White & polished

88039638812. ✘ Black & polished

**Question Number : 104 Question Id : 8803969704 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Which of the following number signifies the degree of penetration of heating or cooling effect through solid?

**Options :**

88039638813. ✘ Biot

88039638814. ✔ Fourier

88039638815. ✖ Nusselt

88039638816. ✖ Grashof

**Question Number : 105 Question Id : 8803969705 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

Humidification is a

**Options :**

88039638817. ✖ Mass transfer operation

88039638818. ✖ Heat transfer operation

88039638819. ✔ Simultaneous heat and mass transfer

88039638820. ✖ Neither mass and heat transfer operation

**Question Number : 106 Question Id : 8803969706 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0**

When a catalyst increases the rate of chemical reaction, the rate constant

**Options :**

88039638821. ✖ Decreases

88039638822. ✔ Increases

88039638823. ✖ Remains constant

88039638824. ✖ Becomes infinite

Question Number : 107 Question Id : 8803969707 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In autocatalytic reactions

Options :

88039638825. ✖ One of the reactants acts as a catalyst

88039638826. ✔ One of the products acts as a catalyst

88039638827. ✖ Catalysts have very high selectivity

88039638828. ✖ Catalyst have very low selectivity

Question Number : 108 Question Id : 8803969708 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

\_\_\_\_\_ heat exchanger is also known as 'hair pin type exchanger'.

Options :

88039638829. ✔ Double pipe

88039638830. ✖ Finned

88039638831. ✖ Plate type

88039638832. ✖ Regenerative

Question Number : 109 Question Id : 8803969709 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In chemical process equipment's, the conical bottom heads used, usually has an apex angle of

Options :

88039638833. ✘ 20°

88039638834. ✘ 40°

88039638835. ✔ 60°

88039638836. ✘ 80°

Question Number : 110 Question Id : 8803969710 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Ammonium sulphate fertiliser is

Options :

88039638837. ✘ The highest concentration nitrogenous fertiliser

88039638838. ✔ The best fertiliser for paddy

88039638839. ✘ A basic fertiliser

88039638840. ✘ A neutral fertiliser

Question Number : 111 Question Id : 8803969711 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Conversion of yellow phosphorous to red phosphorous is done by heating it in covered retorts at \_\_\_\_\_ °C in absence of air.

Options :

88039638841. ✘ 50-80

88039638842. ✔ 250-400

88039638843. ✘ 1000-1200

88039638844. ✘ 800-900

Question Number : 112 Question Id : 8803969712 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Equation of continuity comes from

Options :

88039638845. ✘ Conservation of energy

88039638846. ✔ Conservation of mass

88039638847. ✘ Conservation of work

88039638848. ✘ Conservation of heat

Question Number : 113 Question Id : 8803969713 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If the vapour pressure at two temperatures of a solid phase in equilibrium with its liquid phase are known, then the latent heat of fusion can be calculated by the

Options :

88039638849. ✘ Maxwell's equation

88039638850. ✔ Clayperon-Claussius equation

88039638851. ✘ Van Laar equation

88039638852. ✘ Nernst Heat Theorem

Question Number : 114 Question Id : 8803969714 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When the water is warm, the height to which it can be lifted by a pump

Options :

88039638853. ✘ Decreases due to reduced viscosity

88039638854. ✘ Increases due to increased vapour pressure

88039638855. ✔ Decreases due to reduced vapour pressure

88039638856. ✘ Decreases due to increased frictional resistance

Question Number : 115 Question Id : 8803969715 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In bag filters, filter fabrics are never made of

Options :

88039638857. ✓ Metallic wire woven mesh

88039638858. ✗ Polyester fibres

88039638859. ✗ Cotton fibres

88039638860. ✗ Nylon fibres

Question Number : 116 Question Id : 8803969716 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Controlling heat transfer film co-efficient is the one, which offers \_\_\_\_\_ resistance to heat transfer.

Options :

88039638861. ✗ Zero

88039638862. ✗ Lowest

88039638863. ✓ Largest

88039638864. ✗ mean

Question Number : 117 Question Id : 8803969717 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The reciprocal of stripping factor is termed as

Options :

88039638865. ✘ Selectivity index

88039638866. ✘ Relative volatility

88039638867. ✔ Absorption factor

88039638868. ✘ Murphree efficiency

Question Number : 118 Question Id : 8803969718 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Reaction rate of a first order reaction, which is half completed in 23 minutes will be

Options :

88039638869. ✘  $0.03 \text{ sec}^{-1}$

88039638870. ✔  $0.03 \text{ min}^{-1}$

88039638871. ✘  $0.03 \text{ hr}^{-1}$

88039638872. ✘  $0.05 \text{ min}^{-1}$

Question Number : 119 Question Id : 8803969719 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Which tube arrangement in a heat exchanger would facilitate highest heat transfer rate?

**Options :**

- 88039638873. ✓ Triangular pitch
- 88039638874. ✗ Square pitch
- 88039638875. ✗ Diagonal square pitch
- 88039638876. ✗ Heat transfer rate is independent of tube arrangement

**Question Number : 120 Question Id : 8803969720 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question**

**Mandatory : No Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 1 Wrong Marks : 0**

Choose the correct statement.

**Options :**

- 88039638877. ✓ Coking tendency increases with increasing molecular weight
- 88039638878. ✗ Coking tendency decreases with increasing molecular weight
- 88039638879. ✗ Higher pressure enhances coke formation
- 88039638880. ✗ Coking is an exothermic reaction