Question Paper Preview

Question Paper Name:	Nano Technology 4th May 2019 S2
Subject Name:	Nano Technology
Duration:	120
Share Answer Key With Delivery Engine:	Yes
Actual Answer Key:	Yes

Nano Technology

Display Number Panel:	Yes
Group All Questions:	No

Question Number : 1 Question Id : 2501071921 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the system of equations $2x+3y=5,\ \ 3x+py=10$ has no solution then p = ____.

Options :

1. 4

2. 9

3. 4.5

4. $\frac{2}{9}$

Question Number : 2 Question Id : 2501071922 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is true for all real symmetric matrices?

Options :

1. All the eigen values are real

2. All the eigen values are positive

3. All the eigen values are distinct

4. Sum of all the eigen values is zero

Question Number : 3 Question Id : 2501071923 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $\overline{V} = 5xy\bar{i} + 2y^2\bar{j} + 3yz^2\bar{k}$ is a velocity vector then the divergence of this velocity at (1, 1, 1)is __

Options :

1. 9

2. 14

3. 10

4. 15

Question Number : 4 Question Id : 2501071924 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At x = 0, the function $f(x) = x^3 + 1$ has _____.

Options :

1. a singularity

2. a maximum value

3. a minimum value

4. a point of inflexion

Question Number : 5 Question Id : 2501071925 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the particular integral of $\frac{d^2y}{dx^2}-4\frac{dy}{dx}+4y=2^x$.

Options :

1. $\frac{2^x}{2+2\log x}$

2. $\frac{2^x}{x\log 2-2}$

3. $\frac{2^x}{(\log 2-2)^2}$

4. $\frac{2^x}{x^2\ \log 2}$

Question Number : 6 Question Id : 2501071926 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the two dimensional heat equation in transient state?

Options :

1. $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=0$

2. $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}+\frac{\partial^2 u}{\partial z^2}=0$

3. $\frac{\partial^2 u}{\partial x^2}+\frac{\partial^2 u}{\partial y^2}=\frac{1}{C^2}\frac{\partial u}{\partial t}$

4. $$\frac{\partial^2 u}{\partial t^2} = C^2\left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}\right)$$

Question Number : 7 Question Id : 2501071927 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A bag contains 3 red balls, 4 white balls and 7 black balls. The probability of drawing a red or a black ball is _____.

Options :

1. $\frac{2}{7}$

2. $\frac{5}{7}$

3. $\frac{3}{7}$

4. $\frac{4}{7}$

Question Number : 8 Question Id : 2501071928 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An experiment yields three mutually exclusive events A, B, C. If P(A) = 2P(B) = 3P(C) then P(A) = _____.

Options :

1. $\frac{2}{11}$

2. $\frac{3}{11}$

3. $\frac{6}{11}$

4. $\frac{5}{11}$

Question Number : 9 Question Id : 2501071929 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $y' = 3x, y(1) = 2, h = 0.1$ then $y(0.1)$ by Euler's method is _____.

Options :

1. 2.1

2. 2.2

3. 2.3

4. 2.4

Question Number : 10 Question Id : 2501071930 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\int_0^5 f(x)dx =$ _____ where $f(0) = 1, f(1) = 3, f(2) = 5, f(3) = 8, f(4) = 5$ and $f(5) = 3$, by Trapezoidal rule.

Options :

1. 46

2. 23

3. 15.75

4. 46.24

Question Number : 11 Question Id : 2501071931 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cantilever beam of span L carries a uniformly distributed load W. The maximum bending moment M is

Options :

1. $\frac{WL^2}{2}$

2. $\frac{WL^2}{4}$

3. $\frac{WL^2}{8}$

4. $\frac{WL}{4}$

Question Number : 12 Question Id : 2501071932 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to Lami's theorem _____.

Options :

1. the three forces must be equal

2. the three forces must be at 120° to each other

3. the three forces must be in equilibrium

4. if the three forces acting at a point are in equilibrium, then each force is proportional to the sine of the angle between the other two

Question Number : 13 Question Id : 2501071933 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The forces whose lines of action lie in the same plane and are meeting at one point are known as _____.

Options :

1. coplanar concurrent force system

2. coplanar non-concurrent force system

3. non-coplanar concurrent force system

4. non-coplanar non-concurrent force system

Question Number : 14 Question Id : 2501071934 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to work energy principle, a particle of mass 'M' when subjected to unbalanced force system, the work done during displacement by all forces is equal to change in _____.

Options :

1. gravitational energy

2. kinetic energy

3. mechanical energy

4. potential energy

Question Number : 15 Question Id : 2501071935 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is subjected to a direct tensile stress (σ) in one plane. The shear stress is maximum at a section inclined at _____ to the normal of the section.

Options :

1. 45° and 90°

2. 45° and 135°

3. 60° and 150°

4. 30° and 135°

Question Number : 16 Question Id : 2501071936 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A circular shaft of diameter 'd' is subjected to torque 'T', the maximum value of the shear stress is _____.

Options :

1. $\frac{64T}{\pi d^3}$

2. $\frac{32T}{\pi d^3}$

3. $\frac{16T}{\pi d^3}$

4. $\frac{8T}{\pi d^3}$

Question Number : 17 Question Id : 2501071937 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Slope of bending moment diagram at any section is _____.

Options :

1. tensile force at that section

2. shear force at that section

3. torsional force at that section

4. directional force at the section

Question Number : 18 Question Id : 2501071938 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Varingon's theorem of moments states that if a number of co-planar forces acting on a particle are in equilibrium, then _____.

Options :

1. their algebraic sum is zero

2. their lines of action are at equal distances

3. the algebraic sum of their moments about any point in their plane is zero

4. the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point

Question Number : 19 Question Id : 2501071939 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum frictional force, which comes into play, when a body just begins to slide over the surface of the other body, is known as _____.

Options :

1. static friction

2. limiting friction

3. dynamic friction

coefficient of friction

4.

Question Number : 20 Question Id : 2501071940 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a Newtonian fluid _____.

Options :

1. shear stress is proportional to shear strain

2. rate of shear stress is proportional to shear strain

3. shear stress is proportional to rate of shear strain

4. rate of shear stress is proportional to rate of shear strain

Question Number : 21 Question Id : 2501071941 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A body is vibrating at 10 vibrations/sec in SHM of 10 cm amplitude. The maximum velocity in cm/sec can be

Options :

1. 100π

2. 50π

3. 200π

4. 100

Question Number : 22 Question Id : 2501071942 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a loaded beam, the point of contraflexure occurs at a section where

Options :

1. bending moment is minimum

2. bending moment is zero or changes sign

3. bending moment is maximum

4. shearing force is maximum

Question Number : 23 Question Id : 2501071943 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the blades of the axial flow turbine are fixed, these are called _____.

Options :

1. Kaplan turbine

2. Propeller turbine

3. Francis turbine

4. Pelton turbine

Question Number : 24 Question Id : 2501071944 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flow in a river during the period of heavy rainfall is _____.

Options :

1. steady, non-uniform and two-dimensional.

2. unsteady, uniform and three-dimensional.

3. steady, uniform and two-dimensional.

4. unsteady, non-uniform and three-dimensional.

Question Number : 25 Question Id : 2501071945 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a shell and tube heat exchanger, baffles are mainly used to _____.

Options :

1. increase the mixing of fluid

2. increase the heat transfer area

3. deflect the flow in desired direction

4. reducing fouling of the tube surface

Question Number : 26 Question Id : 2501071946 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Laminar flow of a Newtonian fluid ceases to exist, when the Reynolds number exceeds _____.

Options :

1. 4000

2. 2100

3. 1500

4. 3000

Question Number : 27 Question Id : 2501071947 Question Type : MCQ Option Shuffling : Yes Display Ques Single Line Question Option : No Option Orientation : Vertical

The parameters which determine the friction factor for turbulent flow in a rough pipe are _____.

Options :

1. Froude number and relative roughness

2. Froude number and Mach number

3. Reynold's number and relative roughness

4. Mach number and relative roughness

Question Number : 28 Question Id : 2501071948 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For laminar flow through a round pipe, the shear stress _____.

Options :

1. remains constant over the cross-section.

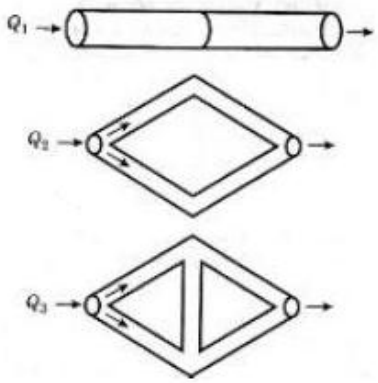
2. varies linearly with the radial distance.

3. must be zero at all points.

4. varies parabolically with radial distance.

Question Number : 29 Question Id : 2501071949 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Three piping networks as shown in the figure are placed horizontally. They are made using identical pipe segments and are subjected to the same pressure drop across them. Assuming no pressure losses at junctions, the flow rates across the three networks are related as Q1 : Q2 : Q3 is



Options :

1. 1:3:3

2. 1:2:3

3. 1:2:2

4. 1:3:2

Question Number : 30 Question Id : 2501071950 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Within a boundary layer for a steady incompressible flow, the Bernoulli equation _____.

Options :

1. holds because the flow is steady

2. holds because the flow is incompressible

3. holds because the flow is transitional

4. does not hold because the flow is friction

Question Number : 31 Question Id : 2501071951 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following forces dominates at an interatomic distance less than 10 nanometers

Options :

1. Gravity

2. Van der Waals

3. Inertia

4. Electromagnetism

Question Number : 32 Question Id : 2501071952 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The distance between metacentre and _____ is called metacentric height.

Options :

1. water surface

2. centre of gravity

3. centre of buoyancy

4. epi centre

Question Number : 33 Question Id : 2501071953 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The flow of a fluid in a pipe takes place from _____.

Options :

1. higher level to lower level

small end to large end

2.

higher energy to lower energy

3.

higher pressure to lower pressure

4.

Question Number : 34 Question Id : 2501071954 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In descending order of magnitude, the thermal conductivity of the following

a) pure iron,

b) liquid water,

c) saturated water vapour and

d) pure aluminum

can be arranged as _____.

Options :

a, b, c, d

1.

b, c, a, d

2.

d, a, b, c

3.

d, c, b, a

4.

Question Number : 35 Question Id : 2501071955 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the phenomenon of cavitation, the characteristic fluid property involved is _____.

Options :

vapour pressure

1.

2. surface tension

3. viscosity

4. bulk modulus of elasticity

Question Number : 36 Question Id : 2501071956 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For reversible adiabatic compression in a steady flow process, the work transfer per unit mass is _____.

Options :

1. $\int P\,dv$

2. $\int vdp$

3. $\int Tds$

4. $\int s\,dT$

Question Number : 37 Question Id : 2501071957 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A redundant frame is also called _____ frame.

Options :

1. perfect

2. deficient

3. imperfect

4. rigid

Question Number : 38 Question Id : 2501071958 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The heat transfer by radiation from a mild steel surface is to be reduced by reducing the emissivity of the surface. This can be best achieved by _____.

Options :

1. painting the surface black

2. painting the surface white (with aluminium paint)

3. giving the surface a mirror finish

4. roughening the surface

Question Number : 39 Question Id : 2501071959 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

High air-fuel ratio in gas turbines _____.

Options :

1. increases power output

2. improves thermal efficiency

3. reduces exhaust temperature

4. do not damage turbine blades

Question Number : 40 Question Id : 2501071960 Question Type : MCQ Option Shuffling : Yes Display Ques Single Line Question Option : No Option Orientation : Vertical

A gas contained in a cylinder is compressed, the work required for compression being 5000 kJ. During the process, heat interaction of 2000 kJ causes the surroundings to be heated. The change of internal energy of the gas during the process is _____.

Options :

1. −7000 kJ

2. −1500 kJ

3. 3000 kJ

4. 3500 kJ

Question Number : 41 Question Id : 2501071961 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is an Intensive property

Options :

1. Enthalpy

2. Volume

3. Chemical potential

4. Entropy

Question Number : 42 Question Id : 2501071962 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A large Reynolds number is an indication of _____.

Options :

1. smooth and streamline flow

2. highly turbulent flow

3. steady flow

4. laminar flow

Question Number : 43 Question Id : 2501071963 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is true for reversible polytropic process?

Options :

1. Temperature remains constant

2. Entropy remains constant

3. Internal energy remains constant

4. Enthalpy remains constant

Question Number : 44 Question Id : 2501071964 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The steam ejector is used to _____.

Options :

1. remove condensate from the steam pipelines

2. create vacuum

3. superheat the steam

4. create a vapourization

Question Number : 45 Question Id : 2501071965 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The work ratio of a gas turbine plant is given by _____.

Options :

1. $\frac{\text{Net work output}}{\text{Workdone by the turbine}}$

2. $\frac{\text{Net work output}}{\text{Heat supplied}}$

3. $\frac{\text{Actual temperature drop}}{\text{Isentropic temperature drop}}$

4. $\frac{\text{Isentropic increase in temperature}}{\text{Actual increase in temperature}}$

Question Number : 46 Question Id : 2501071966 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An adiabatic process is one in which _____.

Options :

1. heat enters

2. the temperature of the gas unchanged

3. the change in external energy is equal to the mechanical workdone

4. the change in internal energy is equal to the mechanical workdone

Question Number : 47 Question Id : 2501071967 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Two plates placed 150 mm apart are maintained at 1000°C and 70°C. The heat transfer will takes place mainly by _____.

Options :

1. convection

2. free convection

3. forced convection

4. radiation

Question Number : 48 Question Id : 2501071968 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a closed system is undergoing an irreversible process, the entropy of the system _____.

Options :

1. must increase.

2. always remain constant.

3. must decrease.

4. can increase, decrease or remain constant.

Question Number : 49 Question Id : 2501071969 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Ellingham diagram of oxides does not give any idea about _____.

Options :

1. reduction of metal sulphides

2. oxidation of metals

3. rate of reaction

4. reduction of metal oxides

Question Number : 50 Question Id : 2501071970 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When the expansion or compression takes place according to the law $pv^n = C$, the process is known as

Options :

1. isothermal process

2. adiabatic process

3. hyperbolic process

4. polytropic process

Question Number : 51 Question Id : 2501071971 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The efficiency of diesel cycle approaches to Otto cycle efficiency when _____.

Options :

1. cut-off is increased

2. cut-off is decreased

3. cut-off is zero

cut-off is constant

4.

Question Number : 52 Question Id : 2501071972 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An invariant reaction that produces a solid up on cooling two liquids is _____.

Options :

eutectic

1.

peritectic

2.

monotectic

3.

syntectic

4.

Question Number : 53 Question Id : 2501071973 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Thermal diffusivity of a substance is _____.

Options :

inversely proportional to thermal conductivity

1.

directly proportional to thermal conductivity

2.

directly proportional to the square of thermal conductivity

3.

inversely proportional to the square of thermal conductivity

4.

Question Number : 54 Question Id : 2501071974 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the same compression ratio, the efficiency of dual combustion cycle is _____.

Options :

1. greater than Diesel cycle and less than Otto cycle

2. less than Diesel cycle and greater than Otto cycle

3. greater than Diesel cycle

4. less than Diesel cycle

Question Number : 55 Question Id : 2501071975 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cycle consisting of two reversible isothermal and two reversible isobaric processes is known as

Options :

1. Atkinson cycle

2. Stirling cycle

3. Brayton cycle

4. Ericsson cycle

Question Number : 56 Question Id : 2501071976 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Second law of thermodynamics deals with _____.

Options :

1. irreversible processes only

2. direction of energy transfer

amount of energy transferred

3.

non-cyclic process only

4.

Question Number : 57 Question Id : 2501071977 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The equation relating friction factor to Reynold number, $f^{-0.5} = 4 \log_e \left(\frac{N_{Re}}{f} \right)^{-0.4}$, is called the _____ equation.

Options :

Nikuradse

1.

Von-Karman

2.

Blausius

3.

Colebrook

4.

Question Number : 58 Question Id : 2501071978 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If liquid A and B form an ideal solution then _____.

Options :

the free energy of the mixing is zero

1.

the free energy as well as the entropy of the mixing are each zero

2.

the enthalpy of the mixing is zero

3.

4. the entropy of the mixing is zero

Question Number : 59 Question Id : 2501071979 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pitot tube is used to measure the velocity head of _____.

Options :

1. still fluid

2. laminar flow

3. turbulent flow

4. flowing fluid

Question Number : 60 Question Id : 2501071980 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dietus-Boelter equation used for the determination of heat transfer co-efficient is valid _____.

Options :

1. for fluids in laminar flow

2. for fluids in turbulent flow

3. when Grashhoff number is very important

4. for liquid metals

Question Number : 61 Question Id : 2501071981 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In forced convection, the Nusselt number is a function of _____

Options :

1. Re and Pr

2. Re and Gr

3. Pr and Gr

4. Br and Kr

Question Number : 62 Question Id : 2501071982 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

All perfect gases change in volume by 1/273th of its original volume at 0°C for every 1°C change in temperature, when the pressure remains constant. This statement is called _____.

Options :

1. Boyle's law

2. Charles' law

3. Gay-Lussac law

4. Joule's law

Question Number : 63 Question Id : 2501071983 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat is mainly transferred by conduction, convection and radiation in _____.

Options :

1. insulating pipes carrying hot water

2. refrigerator freezer coil

3. boiler furnaces

4. condensation of steam in a condenser

Question Number : 64 Question Id : 2501071984 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Sublimation is the process of

Options :

1. changing from solid state to direct gas state

2. changing from gas state to direct solid state

3. super saturation of vapour

4. existence of solid, liquid and gas simultaneously

Question Number : 65 Question Id : 2501071985 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following cycle is used for air craft refrigeration?

Options :

1. Brayton cycle

2. Joule cycle

3. Reversed Brayton cycle

4. Bell-Coleman cycle

Question Number : 66 Question Id : 2501071986 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The crystal structure of cementite is _____.

Options :

1. BCC

2. Orthorhombic

3. CPH

4. FCC

Question Number : 67 Question Id : 2501071987 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the lattice of alpha iron, carbon atoms occupy _____.

Options :

1. substitutional sites

2. interstitial sites

3. tetrahedral sites

4. octahedral sites

Question Number : 68 Question Id : 2501071988 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A cubic unit cell satisfies which of the following equations?

Options :

1. $a = b = c, \alpha = \beta = \Upsilon = 90°$

2. $a \neq b = c, \alpha = \beta = \Upsilon = 90°$

3. $a = b \neq c, \alpha = \beta = \Upsilon = 90°$

4. $a = b = c, \alpha \neq \beta = \Upsilon = 90°$

Question Number : 69 Question Id : 2501071989 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The material which is used as a heating element is _____.

Options :

1. Constantan

2. Kanthal

3. Manganin

4. Invar

Question Number : 70 Question Id : 2501071990 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The class of steel containing 16 to 18% chromium and about 0.12% carbon is called _____.

Options :

1. Austenitic stainless steel

2. Martenistic stainless steel

3. Nickel steel

4. Ferritic stainless steel

Question Number : 71 Question Id : 2501071991 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For destructive interference to take place, the path difference between the two waves should be _____.

Options :

1. $n\lambda$

2. $2n\lambda$

3. $(n + 1/2)\lambda$

4. $(2n + 1)\lambda$

Question Number : 72 Question Id : 2501071992 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The coordination number for a H.C.P. lattice is

Options :

1. 4

2. 8

3. 12

4. 6

Question Number : 73 Question Id : 2501071993 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When are the slip lines observed?

Options :

1. After plastic deformation

2. Before plastic deformation

3. After mechanical working

4. After annealing

Question Number : 74 Question Id : 2501071994 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not true for crystallographic axes?

Options :

1. They must be parallel to the edges of the unit cell.

2. They must be perpendicular to each other.

3. They must originate at one of the vertices of the cell.

4. They form a right-handed co-ordinate system.

Question Number : 75 Question Id : 2501071995 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

HCP and BCC are called close-packed structures. Close packed structures have

Options :

1. highest packing efficiency.

2. highest void fraction.

3. highest density.

4. highest void fraction and highest density.

Question Number : 76 Question Id : 2501071996 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An isolated system can exchange _____ with its surroundings.

Options :

1. matter

2. energy

3. neither matter nor energy

4. both matter and energy

Question Number : 77 Question Id : 2501071997 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stress relaxation is the phenomenon _____.

Options :

1. in which parts are not loaded

2. in which stress remains constant on increasing load

3. in which deformation tends to loosen the joint and produces a stress reduced

4. stress reduces on increasing load

Question Number : 78 Question Id : 2501071998 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The dislocation reaction $\frac{a}{2}[1\ \ 1\ \ 1]+\frac{a}{2}[1\ \ 1\ \ 1]\rightarrow a[1\ \ 0\ \ 0]$ is _____.

Options :

1. energetically favourable

2. energetically unfavourable

3. vectorially unbalanced

4. likely to occur in Tin

Question Number : 79 Question Id : 2501071999 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following statements is correct?

A) Molarity B) Molality C) Mole

Options :

1. A, B and C are all intensive

2. A and B are intensive and C is extensive

3. A is intensive, B and C are extensive

4. A and C are intensive, B is extensive

Question Number : 80 Question Id : 2501072000 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following point defects is non-stoichiometric in nature?

Options :

1. Schottky defect

2. Metal excess defect

3. Interstitial defect

4. Impurity defect

Question Number : 81 Question Id : 2501072001 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hydrogen bonds are stronger than _____.

Options :

1. Vander Walls bonds

2. Ionic bonds

3. Metallic bonds

4. Covalent bonds

Question Number : 82 Question Id : 2501072002 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Materials which can retain their strength above 550°C are known as _____.

Options :

1. ceramics

2. refractories

3. metals

4. non-metals

Question Number : 83 Question Id : 2501072003 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Braggs law of diffraction is given by which of the following? (Symbols have usual meanings.)

Options :

1. $2d \sin\theta = \lambda$

2. $2d = n\lambda$

3. $2d = n\lambda \sin\theta$

$2d \sin\theta = n\lambda$

4.

Question Number : 84 Question Id : 2501072004 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The size of a DNA molecule is approximately equal to _____.

Options :

10 nm

1.

5 nm

2.

1 nm

3.

2 nm

4.

Question Number : 85 Question Id : 2501072005 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cast iron has high _____ strength.

Options :

tensile

1.

compressive

2.

shear

3.

fatigue

4.

Question Number : 86 Question Id : 2501072006 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Elastic energy of a dislocation is _____ the Burgers vector.

Options :

1. directly proportional to

2. proportional to the square of

3. not dependent on

4. proportional to the square root of

Question Number : 87 Question Id : 2501072007 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The total area under the stress-strain curve of a mild steel specimen tested up to failure under tension is a measure of _____.

Options :

1. ductility

2. ultimate strength

3. toughness

4. stiffness

Question Number : 88 Question Id : 2501072008 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The number of dislocations increases drastically during _____.

Options :

1. solidification

2. plastic deformation

elastic deformation

3.

heat treatment

4.

Question Number : 89 Question Id : 2501072009 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An edge dislocation can move into a different slip plane by _____.

Options :

glide

1.

cross-slip

2.

cross-slip and climb

3.

climb

4.

Question Number : 90 Question Id : 2501072010 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In ball milling, known microcrystalline structures are broken down into _____ structures.

Options :

micro

1.

nano

2.

pico

3.

femto

4.

Question Number : 91 Question Id : 2501072011 Question Type : MCQ Option Shuffling : Yes Display Ques Single Line Question Option : No Option Orientation : Vertical

Which equation is to be used for hydrocarbon and light gas mixture from cryogenic temperatures to critical region?

Options :

1. $K_i = \frac{\phi_{iL}}{\phi_{iV}}$

2. $K_i = \frac{\gamma_{iL}\phi_{iL}}{\phi_{iV}}$

3. $K_i = \frac{P_i^s}{P}$

4. $K_i = \frac{\gamma_{iL}P_i^s}{P}$

Question Number : 92 Question Id : 2501072012 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The energy gap of semiconductors _____.

Options :

1. is constant

2. varies with temperature

3. varies with voltage

4. varies with doping concentration

Question Number : 93 Question Id : 2501072013 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In nano metallic material system thermal energy is mainly carried by

Options :

1. electrons

2. holes

3. photons

4. ions

Question Number : 94 Question Id : 2501072014 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum number of phases that can be in equilibrium in a binary metal system is

Options :

1. 4

2. 3

3. 2

4. 1

Question Number : 95 Question Id : 2501072015 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Erichsen cupping test is known as _____.

Options :

1. creep test

2. torsion test

3. fatigue test

4. formability test

Question Number : 96 Question Id : 2501072016 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a zone of fatigue fracture?

Options :

1. Zone of crack nucleation

2. Fatigue zone

3. Elastic zone

4. Final fracture

Question Number : 97 Question Id : 2501072017 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following property can be enhanced by reinforcing aluminum alloy?

Options :

1. Density

2. Torsion resistance

3. Wear resistance

4. Strength

Question Number : 98 Question Id : 2501072018 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

_____ is a donor impurity for a p-type semiconductor.

Options :

1. P

2. As

3. In

4. Sb

Question Number : 99 Question Id : 2501072019 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the number density of electrons is equal to the number density of holes (ne = nh), the semiconductor is classified as _____.

Options :

1. extrinsic semiconductor

2. intrinsic semiconductor

3. insulator

4. super semi conductor

Question Number : 100 Question Id : 2501072020 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Chemical vapor deposition involves depositing nano particulate material from the _____ phase.

Options :

1. solid

2. liquid

3. gaseous

4. gel

Question Number : 101 Question Id : 2501072021 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Al-alloys for engine/automobile parts are reinforced to increase their _____.

Options :

1. strength

2. wear resistance

3. elastic modulus

4. density

Question Number : 102 Question Id : 2501072022 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The synthesized magnetic nano particles from _____ have been found to self-arrange automatically.

Options :

1. zinc

2. copper

3. iron

4. zirconium

Question Number : 103 Question Id : 2501072023 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Corrosion resistance of stainless steel is due to _____.

Options :

1. presence of Mo

2. addition of Cr

3. Presence of C

4. addition of Ni

Question Number : 104 Question Id : 2501072024 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The thermal conductivity of an SWNT along length is _____ W/mK.

Options :

1. 35

2. 350

3. 385

4. 3500

Question Number : 105 Question Id : 2501072025 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The size of a nanoparticle is _____.

Options :

1. less than an electron

2. less than an atom

3. less than a polymer molecule

4. less than a nucleus

Question Number : 106 Question Id : 2501072026 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nano drugs are _____ effective than bulk drugs.

Options :

1. more

2. less

3. same

4. not

Question Number : 107 Question Id : 2501072027 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The life of satellites increase by using _____ materials.

Options :

1. nano

2. bulk

3. metals

4. ceramics

Question Number : 108 Question Id : 2501072028 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following methods can be used to produce nano-powders of oxides?

Options :

1. Plasma arching

2. Sol-gel technique

3. Chemical vapour deposition

4. Mechanical crushing

Question Number : 109 Question Id : 2501072029 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The material to be used as mechanical spring should have _____.

Options :

1. low yield stress and high modulus of elasticity

2. high yield stress and high modulus of elasticity

3. low yield stress and low modulus of elasticity

4. high yield stress and low modulus of elasticity

Question Number : 110 Question Id : 2501072030 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which among the following statements are correct?

i) Energy is an extensive property

ii) Specific energy is an extensive property

iii) Energy is a point function

iv) Heat capacity is an extensive property

Options :

1. (i), (ii) and (iii)

2. (i), (iii) and (iv)

3. (ii), (iii) and (iv)

4. (i), (ii), (iii) and (iv)

Question Number : 111 Question Id : 2501072031 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

"There is Plenty of Room at the Bottom"– was coined by.

Options :

1. Richard Smalley

2. Carl Sagan

3. K. Eric Drexler

4. Richard Feynman

Question Number : 112 Question Id : 2501072032 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Given the shear modulus (G) for aluminum as $2.4e^{+10}$ N/m^2 and the shear strain is given as $6e^{-5}$. What is the value for shear stress?

Options :

1. $13.4e^{+5}$ N/m^2

2. $14.4e^{+5}$ N/m^2

3. $12.4e^{+5}$ N/m^2

4. $13.4e^{-5}$ N/m^2

Question Number : 113 Question Id : 2501072033 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following ceramic products is mostly used as pigment in paints?

Options :

1. TiO_2

2. SiO_2

3. UO_2

4. ZrO_2

Question Number : 114 Question Id : 2501072034 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a dielectric which of the following properties hold good?

Options :

1. They are superconductors at high temperatures.

2. They are superconductors at low temperatures.

3. They can never become a superconductor.

4. They have very less dielectric breakdown voltage.

Question Number : 115 Question Id : 2501072035 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The volume of a nucleus in a atom is proportional to the _____.

Options :

1. mass number

2. proton number

3. neutron number

4. electron number

Question Number : 116 Question Id : 2501072036 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which type of load is applied in tensile testing?

Options :

1. Axial load

2. Shear load

3. Transverse load

4. Longitudinal load

Question Number : 117 Question Id : 2501072037 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which type of crystals are generally good optical reflectors?

Options :

1. Metals

2. Ionic crystals

3. Covalent crystals

4. Liquid crystals

Question Number : 118 Question Id : 2501072038 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The materials having very small susceptibility at all temperatures are _____.

Options :

1. antiferromagnetic

2. diamagnetic

3. ferromagnetic

4. paramagnetic

Question Number : 119 Question Id : 2501072039 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The heat supplied to the gas at constant volume is (where m = Mass of gas, c_v = specific heat at constant volume, c_p = specific heat at constant pressure, T_2-T_1 = rise in temperature, and R = gas constant) _____.

Options :

1. $mR(T_2 - T_1)$

2. $mc_v(T_2 - T_1)$

3. $mc_p(T_2 - T_1)$

4. $mc_p(T_2 + T_1)$

Question Number : 120 Question Id : 2501072040 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following can be the value of Poisson's ratio for an engineering structure?

Options :

1. 2

2. 0.4

3. 29

4. 100