

Question Paper Preview

Subject Name: Nanotechnology

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 7621611921 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The algebraic sum of the resolved parts of a number of forces in a given direction is equal to the resolved part of their resultant in the same direction. This is as per the principle of

Options :

1. independence of forces
2. dependence of forces
3. balance of force
4. resolution of forces

Question Number : 2 Question Id : 7621611922 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to law of triangle of forces

Options :

1. three forces acting at a point will be in equilibrium
2. three forces acting at a point can be represented by a triangle, each side being proportional to force
if three forces acting upon a particle are represented in magnitude and direction by the sides of a triangle,
taken in order, they will be in equilibrium
3. if three forces acting at a point are in equilibrium, each force is proportional to the sine of the angle
between the other two
4. between the other two

Question Number : 3 Question Id : 7621611923 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The C.G. of a solid cone lies on the axis at the height

Options :

1. one-fourth of the total height above base
2. one-third of the total height above base
3. one-half of the total height above base

4. three-eighth of the total height above base

Question Number : 4 Question Id : 7621611924 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In the equation of virtual work, following force is neglected

- Options :
1. reaction of any rough surface with which the body is in contact
 2. reaction of a rough surface of a body which rolls on it with slipping
 3. reaction at a point or on axis, fixed in space, around which a body is free to turn
 4. reaction of any smooth surface with which the body is in contact

Question Number : 5 Question Id : 7621611925 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Limiting force of friction is the

- Options :
1. tangent of angle between normal reaction and the resultant of normal reaction and limiting friction
 2. ratio of limiting friction and normal reaction
 3. the friction force acting when the body is in motion
 4. the friction force acting when the body is just about to move

Question Number : 6 Question Id : 7621611926 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Periodic time of a body moving with simple harmonic motion is

- Options :
1. directly proportional to its angular velocity
 2. directly proportional to the square of its angular velocity
 3. inversely proportional to the square of its angular velocity
 4. inversely proportional to its angular velocity

Question Number : 7 Question Id : 7621611927 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a particle moves along the circumference of a circle of radius 'r' with a uniform angular velocity ω radians/sec, the equation for the velocity of the particle is given by

- Options :
1. $v = \omega\sqrt{y^2 - r^2}$
 2. $v = \omega\sqrt{y - r}$
 3. $v = \omega\sqrt{r^2 - y^2}$
 4. $v = \omega\sqrt{r^2 + y^2}$

Question Number : 8 Question Id : 7621611928 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A circular disc rolls down an inclined plane. The fraction of its total energy associated with its rotation is

Options :

1. $\frac{1}{2}$
2. $\frac{1}{3}$
3. $\frac{1}{4}$
4. $\frac{2}{3}$

Question Number : 9 Question Id : 7621611929 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The type of motion when the acceleration is proportional to the displacement is called

Options :

1. translation
2. rotational
3. gyroscopic
4. simple harmonic

Question Number : 10 Question Id : 7621611930 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum efficiency of a screw jack with square threads and friction angle of 30° can be

Options :

1. 100 %
2. 50 %
3. 33 %
4. 30%

Question Number : 11 Question Id : 7621611931 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amplitude of a vibrating body situated in a resistive medium

Options :

1. decreases exponentially with time
2. decreases linearly with time
3. decreases sinusoidally with time
4. remains constant with time

Question Number : 12 Question Id : 7621611932 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If speed of rotation of earth decreases, the weight of the body will

Options :

1. only increase

2. only decrease
3. remain same
4. may increase or decrease

Question Number : 13 Question Id : 7621611933 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Flow stress corresponds to

Options :

1. fluids in motion
2. breaking point
3. plastic deformation of solids
4. rupture stress

Question Number : 14 Question Id : 7621611934 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Proof load test means

Options :

1. testing done to specified load for a specified period of time
2. testing done up to failure
3. testing done with increased loads till failure
4. testing done with specified load upto yielding

Question Number : 15 Question Id : 7621611935 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The normal stress on an oblique plane at an angle θ to the cross-section of a body which is subjected to a direct tensile stress (σ) is equal to

Options :

1. $\frac{\sigma}{2} \sin 2\theta$
2. $\sigma \cos \theta$
3. $\sigma \cos^2 \theta$
4. $\sigma \sin^2 \theta$

Question Number : 16 Question Id : 7621611936 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum strain energy that can be stored in a body is known as

Options :

1. impact energy
2. resilience
3. proof resilience
4. toughness

Question Number : 17 Question Id : 7621611937 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which of the following cases, Mohr's circle is used to determine the stresses on a oblique plane?

Options :

1. two unequal like principal stresses
2. two unequal unlike principal stresses
3. direct tensile stress in one plane accompanied by a shear stress
4. all options are correct

Question Number : 18 Question Id : 7621611938 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A simply supported beam of span (l) carries a point load at the middle of the beam. The shear force diagram will be

Options :

1. a rectangle
2. a triangle
3. two equal and opposite rectangles
4. two equal and opposite triangles

Question Number : 19 Question Id : 7621611939 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The bending moment on a section is maximum where shearing force is

Options :

1. minimum
2. maximum
3. zero
4. changing sign

Question Number : 20 Question Id : 7621611940 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a tensile test of a specimen, the ratio of maximum load to the original cross-section area of the test piece is called

Options :

1. yield stress
2. ultimate stress
3. safe stress
4. breaking stress

Question Number : 21 Question Id : 7621611941 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The expression $EI \frac{d^2 y}{dx^2}$ at a section of a member represents

Options :

1. shearing force
2. rate of loading
3. bending moment
4. slope

Question Number : 22 Question Id : 7621611942 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The torsional rigidity of a shaft is defined as the torque required to produce

Options :

1. maximum twist in the shaft
2. maximum shear stress in the shaft
3. minimum twist in the shaft
4. a twist of one radian per unit length of the shaft

Question Number : 23 Question Id : 7621611943 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The torsion equation is given by

Options :

1. $\frac{T}{J} = \frac{f_s}{R} = \frac{L}{C\theta}$
2. $\frac{T}{R} = \frac{f_s}{J} = \frac{L}{C\theta}$
3. $\frac{T}{J} = \frac{f_s}{R} = \frac{C\theta}{L}$
4. $\frac{T}{f_s} = \frac{R}{J} = \frac{C\theta}{L}$

Question Number : 24 Question Id : 7621611944 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The shear stress at a point in a shaft subjected to a torque

Options :

1. is proportional to the polar moment of inertia and to the distance of the point from the axis
2. is directly proportional to the applied torque and polar moment of inertia
3. is directly proportional to the applied torque and inversely proportional to the polar moment of inertia
4. is inversely proportional to the polar moment of inertia

Question Number : 25 Question Id : 7621611945 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Newton's law of viscosity states that shear stress is directly proportional to

Options :

1. velocity
2. the velocity gradient
3. shear strain
4. the viscosity

Question Number : 26 Question Id : 7621611946 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The hydrostatic law states that the rate of increase of pressure in a vertical direction is equal to

Options :

1. density of fluid
2. specific weight of the fluid
3. weight of the fluid
4. viscosity of the fluid

Question Number : 27 Question Id : 7621611947 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The resultant hydrostatic force acts through a point known as

Options :

1. center of gravity
2. center of buoyancy
3. center of pressure
4. hydrostatic point

Question Number : 28 Question Id : 7621611948 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A stream line is a line

Options :

1. which is along the path of a particle
2. which is always parallel to the main direction of flow
3. across which there is a flow
4. on which tangent drawn at any point gives the direction of velocity

Question Number : 29 Question Id : 7621611949 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Continuity equation deals with the law of conservation of

Options :

1. mass
2. momentum
3. energy
4. force

Vorticity is given by

Options :

1. two times the rotation
2. 1.5 times the rotation
3. three times the rotation
4. equal to the rotation

Question Number : 31 Question Id : 7621611951 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The square root of the ratio of inertia force to gravity force is called

Options :

1. Reynolds number
2. Froude number
3. Mach number
4. Euler number

Question Number : 32 Question Id : 7621611952 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When venturimeter is inclined, then for a given flow it will show

Options :

1. less reading
2. more reading
3. same reading
4. inaccurate reading

Question Number : 33 Question Id : 7621611953 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The boundary layer separation takes place if

Options :

1. pressure gradient is zero
2. pressure gradient is +ve
3. pressure gradient is -ve
4. it does not depend upon pressure gradient

Question Number : 34 Question Id : 7621611954 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The boundary layer takes place for

Options :

1. ideal fluids
2. pipe-flow only
3. real fluids
4. flow over flat plate only

Question Number : 35 Question Id : 7621611955 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The total drag on a body is the sum of

Options :

1. pressure drag and velocity drag
2. pressure drag and friction drag
3. friction drag and velocity drag
4. pressure drag, velocity drag and friction drag

Question Number : 36 Question Id : 7621611956 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Boundary layer thickness (δ) is the distance from the surface of the solid body in the direction perpendicular to flow, where the velocity of fluid is equal to

Options :

1. free stream velocity
2. 0.9 times the free stream velocity
3. 0.99 times the free stream velocity
4. 0.5 times the free stream velocity

Question Number : 37 Question Id : 7621611957 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The rate of heat transfer from a solid surface to a fluid is obtained from

Options :

1. Newton's law of cooling
2. Fourier's law
3. Kirchhoff's law
4. Stefan's law

Question Number : 38 Question Id : 7621611958 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stefan Boltzmann law states that the total emission from a black body per unit area per unit time

Options :

1. varies directly with the absolute temperature
2. varies inversely with the absolute temperature

3. varies directly with the square of the absolute temperature
4. varies directly with the fourth power of the absolute temperature

Question Number : 39 Question Id : 7621611959 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of logarithmic mean temperature for counter flow heat exchanger as compared to parallel exchanger is always

Options :

1. always less
2. always more
3. constant
4. either less or more

Question Number : 40 Question Id : 7621611960 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For free convection, Nusselt number is a function of

Options :

1. Prandtl and Grashof number
2. Reynold and Grashof number
3. Reynold number only
4. Reynold and Prandtl number

Question Number : 41 Question Id : 7621611961 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following furnace is used for the extraction of cast iron?

Options :

1. Cupola
2. Puddling furnace
3. Bessemer converter
4. Blast furnace

Question Number : 42 Question Id : 7621611962 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Heat input to the furnace is due to

Options :

1. heat in the coke
2. oxidation of carbon
3. oxidation of Iron
4. heat in the choke, oxidation of carbon and iron

Question Number : 43 Question Id : 7621611963 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The efficiency of a cupola varies from

Options :

1. 10% to 20 %
2. 20% to 25%
3. 30%to 50%
4. 55% to 65%

Question Number : 44 Question Id : 7621611964 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of Prandtl number for air is about

Options :

1. 0.1
2. 0.3
3. 0.7
4. 1.7

Question Number : 45 Question Id : 7621611965 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For counter flow heat exchanger

Options :

1. both the fluids at exit are in their hottest state
2. both the fluids at inlet are in their coldest state
3. both the fluids at inlet are in their hottest state
4. one fluid is hottest and other is coldest at inlet

Question Number : 46 Question Id : 7621611966 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In free convection, motion of the fluid is caused by the

Options :

1. weight of the fluid element
2. hydrostatic force on the element
3. buoyancy forces arising from variation in density of the fluid with the temperature
4. thrust force on the element

Question Number : 47 Question Id : 7621611967 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Choose the correct statement

Options :

1. the film heat transfer coefficient is property of the fluid
2. the thermal conductivity is not a property of material
3. a body which is black in colour

4. a body which reflects all radiations is called white body

Question Number : 48 Question Id : 7621611968 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The coefficient of thermal conductivity is defined as the heat flow per unit time

Options :

1. through unit thickness
2. when temperature difference of unity is maintained between opposite faces
3. when temperature gradient is unity
4. across unit area when temperature gradient is unity

Question Number : 49 Question Id : 7621611969 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the axes of a unit cell are at right angles and all the three axial lengths are different, then unit cell is known as

Options :

1. cubic
2. tetragonal
3. monoclinic
4. ortho-rhombic

Question Number : 50 Question Id : 7621611970 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Grain boundary in a crystal is called

Options :

1. Frenkel defect
2. Schottkydefect
3. Edge dislocation
4. Surface defect

Question Number : 51 Question Id : 7621611971 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burger vector in case of screw dislocation is

Options :

1. inclined to the dislocation line
2. parallel to the dislocation line
3. perpendicular to the dislocation line
4. tangent to the dislocation line

Question Number : 52 Question Id : 7621611972 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the two parts of crystal having the same orientation and look like the mirror image of each other, are separated by a boundary, then the boundary is known as

Options :

1. high angle grain boundary
2. tilt boundary
3. twin boundary
4. low angle grain boundary

Question Number : 53 Question Id : 7621611973 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dislocation plays an important role in the process of

Options :

1. elastic deformation
2. plastic deformation
3. self diffusion
4. heat treatment

Question Number : 54 Question Id : 7621611974 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The property of material to be strongly attracted to a magnetic field and to become a powerful magnet, is known as

Options :

1. hysteresis
2. paramagnetism
3. ferromagnetism
4. diamagnetism

Question Number : 55 Question Id : 7621611975 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The property of a material to exist in more than one type of space lattice in the solid state, is known as

Options :

1. polymerization
2. polymorphism
3. hysteresis
4. allotropy

Question Number : 56 Question Id : 7621611976 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The metal which has HCP structure is

Options :

1. silver
2. iron
3. magnesium
4. aluminum

Question Number : 57 Question Id : 7621611977 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Among the crystal structures, which has the highest packing factor is

Options :

1. BCC
2. FCC
3. HCP
4. CCP

Question Number : 58 Question Id : 7621611978 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is the strongest bond?

Options :

1. ionic
2. metallic
3. dispersion
4. hydrogen

Question Number : 59 Question Id : 7621611979 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Metallic bond is

Options :

1. a saturated covalent bond
2. an unsaturated covalent bond
3. a modified version of ionic bond
4. weaker than secondary bonds

Question Number : 60 Question Id : 7621611980 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In general, high cohesive forces are related to

Options :

1. surface roughness
2. low melting point
3. large values of elastic constants
4. large coefficient of thermal expansion

Question Number : 61 Question Id : 7621611981 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Thermocouple works on one of the following principles

Options :

1. Thomson effect
2. Peltier effect
3. Seebach effect
4. Joule effect

Question Number : 62 Question Id : 7621611982 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following material is viscoelastic?

Options :

1. cast iron
2. graphite
3. glass
4. rubber

Question Number : 63 Question Id : 7621611983 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The capacity of a metal to exhibit considerable elastic recovery upon release is known as

Options :

1. resilience
2. hardness
3. stiffness
4. toughness

Question Number : 64 Question Id : 7621611984 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Silicon when added to copper increases

Options :

1. strength
2. hardness
3. strength and hardness
4. strength and ductility

Question Number : 65 Question Id : 7621611985 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The maximum hardenability of any steel depends on

Options :

1. carbon content
2. chemical compound

3. grain size
4. presence of alloying elements

Question Number : 66 Question Id : 7621611986 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The charpy test is conducted to measure

Options :

1. elongation
2. hardness
3. fracture stress
4. brittleness

Question Number : 67 Question Id : 7621611987 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cold working is done on metals

Options :

1. below thermal critical range
2. above thermal critical range
3. at temperature below zero degree centigrade
4. after slightly warming up the metal in furnace

Question Number : 68 Question Id : 7621611988 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The delamination type of defect is observed in

Options :

1. cermaics
2. metals
3. plastics
4. composites

Question Number : 69 Question Id : 7621611989 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The process of releasing internal stresses in metal at low temperature which are below its recrystallization temperature is

Options :

1. Normalizing
2. Recovery
3. Annealing
4. Tempering

Question Number : 70 Question Id : 7621611990 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The process which occurs with heating in excess of that used for recovery is called

Options :

1. grain growth
2. recrystallization
3. cold working
4. hot working

Question Number : 71 Question Id : 7621611991 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one is not hot working?

Options :

1. wire drawing
2. forging
3. welding
4. swaging

Question Number : 72 Question Id : 7621611992 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is the most ductile material

Options :

1. lead
2. tin
3. aluminum
4. silver

Question Number : 73 Question Id : 7621611993 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Zeroth law of thermodynamics states that

Options :

1. if two bodies are each equal in temperature to the temperature of a third body, they are in equal in temperature to each other.
2. if two bodies are each equal in temperature to the temperature of a third body, they are having different temperature.
3. if two bodies are each different in temperature to the temperature of a third body, they are equal in temperature to each other.
4. if two bodies are each different in temperature to the temperature of a third body, they are different in temperature to each other.

Question Number : 74 Question Id : 7621611994 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Isentropic process means

Options :

1. a process in which no heat is supplied or rejected
2. a process in which no heat is supplied or rejected and entropy is constant
3. a process in which temperature is constant
4. a process in which no heat is supplied but temperature is constant

Question Number : 75 Question Id : 7621611995 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A Carnot cycle consists of

Options :

1. two constant pressure and two adiabatic processes
2. two constant volume and two adiabatic processes
3. two isothermal and two adiabatic processes
4. one constant pressure, one constant volume and two adiabatic processes

Question Number : 76 Question Id : 7621611996 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The statement “ heat cannot flow from lower temperature to higher temperature without the aid of external agency” is

Options :

1. Zeroth law of thermodynamics
2. First law of thermodynamics
3. Second law of thermodynamics
4. Third law of thermodynamics

Question Number : 77 Question Id : 7621611997 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A process will be reversible if it involves

Options :

1. friction
2. unresisted expansion
3. heat transfer with a finite temperature difference
4. small temperature difference as well as pressure difference

Question Number : 78 Question Id : 7621611998 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Entropy depends upon

Options :

1. heat and work

2. volume and temperature
3. temperature and pressure
4. heat, work, volume, temperature and pressure

Question Number : 79 Question Id : 7621611999 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The gas constant (R) is equal to

Options :

1. ratio of two specific heats
2. sum of two specific heats
3. difference of two specific heats
4. product of two specific heats

Question Number : 80 Question Id : 7621612000 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The device which converts heat energy into useful work when operating in a cyclic process, is known as

Options :

1. heat pump
2. heat engine
3. compressor
4. alternator

Question Number : 81 Question Id : 7621612001 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area under the a curve on $T-\phi$ diagram represents

Options :

1. heat transfer during reversible process
2. heat transfer during irreversible process
3. change of entropy
4. change of enthalpy

Question Number : 82 Question Id : 7621612002 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In an isothermal process, internal energy

Options :

1. decreases
2. increases
3. remains constant

4. depends upon expansion index

Question Number : 83 Question Id : 7621612003 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The amount of heat generated per kg of fuel is known as

Options :

1. heat energy
2. calorific value
3. specific heat
4. internal energy

Question Number : 84 Question Id : 7621612004 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The difference between free expansion and throttling is :

Options :

1. enthalpy is constant in free expansion but not in throttling
2. temperature is constant in free expansion but not in throttling
3. in case of free expansion the work done is zero but in case of throttling work done is not zero
4. in case of free expansion the gas leaves with high velocity , whereas in throttling the gas velocity is negligible

Question Number : 85 Question Id : 7621612005 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Characteristic gas constant of any perfect gas

Options :

1. increases with increase in temperature
2. increases with increase in pressure
3. is a function of pressure and temperature
4. is constant

Question Number : 86 Question Id : 7621612006 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Internal energy of ideal gas is a function of

Options :

1. temperature and volume
2. pressure and volume
3. pressure and temperature
4. temperature alone

Question Number : 87 Question Id : 7621612007 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Joules statement establishes that during a cycle

Options :

1. heat transfer is equal to work transfer
2. work transfer is only a fraction of the heat transfer
3. heat transfer is only a fraction of work transfer
4. there is no relationship between work transfer and heat transfer

Question Number : 88 Question Id : 7621612008 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The polytropic index of expansion n in the equation $pv^n = c$ for constant volume process is

Options :

1. 1
2. 1.4
3. ∞
4. 0

Question Number : 89 Question Id : 7621612009 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Gibbs free energy G is defined by one of the following relation

Options :

1. $G = H + TS$
2. $G = H - TS$
3. $G = U + TS$
4. $G = U - TS$

Question Number : 90 Question Id : 7621612010 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is an intensive property?

Options :

1. entropy
2. internal energy
3. kinetic energy
4. temperature

Question Number : 91 Question Id : 7621612011 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pick the correct relationship from the following

Options :

1. $TdS = dH - Vdp$
2. $TdS = dH + Vdp$
3. $TdS = dH - pdV$
4. $TdS = dH + pdV$

Question Number : 92 Question Id : 7621612012 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The area under the curve on T-S diagram represents the

Options :

1. heat transfer for all processes
2. heat transfer for adiabatic processes
3. heat transfer for reversible processes
4. heat transfer for irreversible processes

Question Number : 93 Question Id : 7621612013 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Availability function is expressed as

Options :

1. $\Phi = U + p_o V - T_o S$
2. $\Phi = U + p_o dV + T_o S$
3. $\Phi = dU + p_o dV - T_o S$
4. $\Phi = U + p_o dV - T_o S$

Question Number : 94 Question Id : 7621612014 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The specific heat relation is

Options :

1. $(C_p - C_v) = \frac{vT\beta^2}{k}$
2. $(C_p - C_v) = \frac{vTk}{\beta^2}$
3. $(C_p - C_v) = \frac{pTk}{\beta^2}$
4. $(C_p - C_v) = \frac{v^2 T\beta}{k}$

Question Number : 95 Question Id : 7621612015 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A reverse Carnot cycle has a COP of 4. The ratio of higher temperature to lower temperature will be

Options :

1. 1.5
2. 2
3. 1.25
4. 2.5

Question Number : 96 Question Id : 7621612016 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The quantity of heat radiation is dependent on

Options :

1. the shape of the body
2. area of the body
3. temperature of the body
4. profile of the body

Question Number : 97 Question Id : 7621612017 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If donor impurities are introduced into one side and acceptor into the other side of a single crystal of silicon or germanium

Options :

1. a transistor is formed
2. a p - n junction is formed
3. a photo cell is formed
4. a diode is formed

Question Number : 98 Question Id : 7621612018 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In case of p - n junction, as the number of dipoles builds up, a thin layer on either side of the junction which is virtually empty of charge carriers is formed. This layer is known as

Options :

1. boundary layer
2. depletion layer
3. sub-layer
4. neutral layer

Question Number : 99 Question Id : 7621612019 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One of the following is the effect of temperature on dielectric constant

Options :

1. increases with decrease of temperature
2. increases with increase of temperature
3. remains constant with the change of temperature
4. decreases with increase of temperature

Question Number : 100 Question Id : 7621612020 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following has least dielectric constant?

Options :

1. air

2. fiber
3. Zinc
4. paper

Question Number : 101 Question Id : 7621612021 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The permittivity of any dielectric material is influenced by

Options :

1. temperature only
2. frequency only
3. both temperature and frequency
4. structure of the material only

Question Number : 102 Question Id : 7621612022 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

X-ray diffraction is used

Options :

1. to determine the defects in the crystals
2. to study the structure of variety of crystals
3. in the field of medicine
4. for alignment of crystal structure

Question Number : 103 Question Id : 7621612023 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In which one of the following categories wood is classified?

Options :

1. Isotropic
2. orthotropic
3. quasi-isotropic
4. anisotropic

Question Number : 104 Question Id : 7621612024 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Carbon-carbon composite has one of the following advantages

Options :

1. high density
2. high thermal conductivity
3. high thermal resistance
4. high electrical conductivity

Question Number : 105 Question Id : 7621612025 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the fiber materials impart impact resistance property ?

Options :

1. glass
2. carbon
3. boron
4. kevlar

Question Number : 106 Question Id : 7621612026 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Magnetic susceptibility is defined as the ratio of

Options :

1. magnetic moment to volume of the bar
2. magnetization to the magnetic field strength
3. magnetic moment to magnetic field strength
4. magnetization to magnetic moment

Question Number : 107 Question Id : 7621612027 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ceramic material is

Options :

1. inorganic and non-metallic
2. organic and non-metallic
3. inorganic and metallic
4. organic and metallic

Question Number : 108 Question Id : 7621612028 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one is an example of basic refractory?

Options :

1. Lime
2. Ganister
3. Dolomite
4. Silica brick

Question Number : 109 Question Id : 7621612029 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Polyster resins are

Options :

1. unsaturated synthetic resins

2. saturated synthetic resins
3. unsaturated non-synthetic resins
4. saturated non-synthetic resins

Question Number : 110 Question Id : 7621612030 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

High temperature superconductors exhibit superconductivity

Options :

1. at very high temperature
2. at zero degree Kelvin
3. at room temperature
4. around 139 °K and 165 °K

Question Number : 111 Question Id : 7621612031 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following polymer is crystalline?

Options :

1. Polyethylene
2. Polymethylmetacrylate
3. Polyvinyl chloride
4. Polyvinylidene chloride

Question Number : 112 Question Id : 7621612032 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Phenol and formaldehyde are polymerized to produce

Options :

1. bakelite
2. polyester
3. PVC
4. polyethylene

Question Number : 113 Question Id : 7621612033 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a dielectric, power loss is proportional to

Options :

1. V^2
2. V
3. $1/V$
4. $1/V^2$

Question Number : 114 Question Id : 7621612034 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following material is used for making permanent magnets

Options :

1. stainless steel
2. alnico
3. mica
4. copper

Question Number : 115 Question Id : 7621612035 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Magnetic material becomes _____ above curie temperature

Options :

1. ferromagnetic
2. paramagnetic
3. diamagnetic
4. pseudomagnet

Question Number : 116 Question Id : 7621612036 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Large specific surface area is one of the properties obtained by

Options :

1. bulk material
2. nano material
3. composite material
4. micro material

Question Number : 117 Question Id : 7621612037 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nanoscale structures generated by templating method generally are

Options :

1. crystalline
2. non crystalline
3. prone to defects
4. allotropic

Question Number : 118 Question Id : 7621612038 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nano films falls under one of the following category of structure

Options :

1. zero dimension

2. one dimension
3. two dimension
4. three dimension

Question Number : 119 Question Id : 7621612039 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is a bottom-up approach in making nano particles?

Options :

1. Colloidal dispersion
2. Attrition
3. Milling
4. Crushing

Question Number : 120 Question Id : 7621612040 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following is the consolidation method for nanomaterials?

Options :

1. vapour deposition method
2. sintering method
3. plasma method
4. chemical method