Question Paper Preview

Subject Name: Metallurgical Engineering

Display Number Panel: Yes
Group All Questions: No

Question Number : 1 Question Id : 7621612521 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Eigen values of the matrix $A = \begin{bmatrix} 2 & 3+4i \\ 3-4i & 2 \end{bmatrix}$, are

Options :

1. -3 and -7
2. 3 and 7
3. 3 and -7
4. -3 and 7

Question Number : 2 Question Id : 7621612522 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $z = (1 - 2xy + y^2)^{-1/2}$ then $x\frac{\partial z}{\partial x} - y\frac{\partial z}{\partial y} =$

Options :

1. y^2z^3
2. xyz^3
3. xz^3
4. x^2z

Question Number : 3 Question Id : 7621612523 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

$$\int \frac{e^x(1+x)}{(2x+1)^2}dx =$$

Options :

1. $\log e^x[2+x] + c$
2. $\frac{e^x}{2+x} + c$

3. $\frac{e^x}{2x+1} + c$

4. $\frac{-e^x}{2+x} + c$

Question Number : 4 Question Id : 7621612524 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The value of $\frac{1}{(D-1)^3} \times e^x$ is

Options :

1. $\frac{e^x x^4}{24}$

2. $\frac{e^x x^3}{24}$

3. $\frac{e^x x^3}{12}$

4. $\frac{e^x x^2}{6}$

Question Number : 5 Question Id : 7621612525 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If $f(x) = 1 + x + x^2 + \ldots + x^{100}$, then $f'(x) =$

Options :

1. 1001

2. 1010

3. 5005

4. 5050

Question Number : 6 Question Id : 7621612526 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The solution of the differential equation $y' + \frac{y}{x} = 2$ is

Options :

1. $xy = x^2 + c$

2. $y = x^2 + c$

3. $x = y^2 + c$

4. $xy = c$

Question Number : 7 Question Id : 7621612527 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The singular solution of $y = xp + p^2$, where $p = \frac{dy}{dx}$ is

Options :

1. $4x + y^2 = 0$
2. $x^2 + 4y = 0$
3. $y + 4x = c$
4. $y - 4x + c = 0$

Question Number : 8 Question Id : 7621612528 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The unit vector normal to the surface $\phi = x^2 - y^2 + z - 2$ at $(1, -1, 2)$ is

Options :

1. $\frac{1}{3}[i + j + k]$
2. $\frac{1}{3}[i - j + k]$
3. $\frac{1}{3}[2i + 2j + k]$
4. $\frac{1}{3}[i + 2j + 2k]$

Question Number : 9 Question Id : 7621612529 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Laplace transform of $(t\, e^{-2t} \sin t)$ is

Options :

1. $\frac{2s+1}{(s^2+4s+5)^2}$
2. $\frac{s+2}{(s^2+4s+5)^2}$
3. $\frac{2s+4}{(s^2+4s+5)^2}$
4. $\frac{s+4}{(s^2+4s+5)^2}$

Question Number : 10 Question Id : 7621612530 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the mode of a distribution is 40 and it's median is 42, then the arithmetic mean of the distribution is

Options :

1. 43
2. 86

3. 12

4. 82

Display Number Panel: Yes
Group All Questions: No

Question Number : 11 Question Id : 7621612531 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pidgeon process is used for the pyro- metallurgical process for the extraction of

Options :

1. tin

2. aluminum

3. nickel

4. magnesium

Question Number : 12 Question Id : 7621612532 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Mond's process _____ is obtained

Options :

1. liquid nickel

2. nickel vapour

3. Nickel shots

4. nickel carbonyl solution

Question Number : 13 Question Id : 7621612533 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hydrometallurgical technique is suitable

Options :

1. for high grade copper ore

2. for lean and complex ores

3. in places where electricity is cheap

4. in places where HCl is cheaper

Question Number : 14 Question Id : 7621612534 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Effect of temperature on leaching rates is usually expressed as

Options :

1. Arrhenius equation
2. Nernst equation
3. Diffusion equation
4. Jander's equation

Question Number : 15 Question Id : 7621612535 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

When aluminium tri hydrate is calcined at about 1100°C _____ is obtained

Options :

1. aluminium carbonate
2. aluminium sulpahte
3. alumina
4. sodium aluminate

Question Number : 16 Question Id : 7621612536 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A typical collector used in sulphide mineral flotation is

Options :

1. Pine oil
2. potassium ethylxanthate
3. oleic acid
4. polyacrylamide

Question Number : 17 Question Id : 7621612537 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which metal is extracted by leaching

Options :

1. iron
2. aluminium
3. lead
4. tin

Question Number : 18 Question Id : 7621612538 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Identify the correct statement

Options :

1. Sphlerite is zinc carbonate
2. Lead can be produced in blast furnace

3. Copper is extracted through reduction smelting

4. Thiobacillus ferroxidans is a fungus for leaching chalcopyrite.

Question Number : 19 Question Id : 7621612539 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A conventional (Peirce-Smith) copper converter is

Options :

1. blown from both top and bottom

2. bottom blown

3. top blown

4. side blown

Question Number : 20 Question Id : 7621612540 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The most abundant metal present in Earth's crust is

Options :

1. iron

2. aluminium

3. lead

4. titanium

Question Number : 21 Question Id : 7621612541 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cementation is defined as

Options :

1. precipitation of a metal from an aqueous solution

2. gaseous reduction of metal from aqueous solution

3. electrolytic dissociation of aqueous solution

4. electrolytic dissociation of metallic solution

Question Number : 22 Question Id : 7621612542 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Pellets are not as popular a burden as sinter in the iron blast furnace because of their

Options :

1. shape

2. swelling tendency

3. poor reducibility

4. low mechanical strength tension

Question Number : 23 Question Id : 7621612543 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The sintering of iron ore is predominantly a

Options :

1. incipient fusion process

2. combustion process

3. melting process

4. heat transfer process

Question Number : 24 Question Id : 7621612544 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Calcination is carried out to remove the following.

Options :

1. carbon dioxide

2. water

3. volatile metals

4. volatile metal oxides

Question Number : 25 Question Id : 7621612545 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During reduction smelting, the following products are not obtained

Options :

1. matte

2. slag

3. metal

4. flue gases

Question Number : 26 Question Id : 7621612546 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The following is not an agglomeration process

Options :

1. briquetting

2. pelletising

3. nodulising

4. leaching

Question Number : 27 Question Id : 7621612547 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The gas temperature at the tuyere level is about _____ °C

Options :

1. 900
2. 1900
3. 1200
4. 1400

Question Number : 28 Question Id : 7621612548 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The reductant used in the extraction of magnesium from calcined dolomite via Pidgeon process is

Options :

1. pure carbon
2. pure silicon
3. ferrosilicon
4. ferromanganese

Question Number : 29 Question Id : 7621612549 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The refractory brick which has good thermal shock resistance at high temperatures but cracks on cooling below 400°C is

Options :

1. magnesite
2. chrome
3. silica
4. fire clay

Question Number : 30 Question Id : 7621612550 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

One of the methods of purification of leach liquor is ion exchange which involves exchange between

Options :

1. two liquid phases
2. a gaseous phase and a liquid phase
3. a liquid phase and an organic phase
4. a solid phase and a gaseous phase

Question Number : 31 Question Id : 7621612551 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

During deoxidation of steel, the sequence of addition of elements should be as follows:

Options :

1. Si, Mn, Al

2. Al, Mn, Si

3. Mn, Si, Al

4. Al, Si, Mn

Question Number : 32 Question Id : 7621612552 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stainless steel is produced most commonly by_____ process

Options :

1. VOD

2. AOD

3. BOF

4. EAF

Question Number : 33 Question Id : 7621612553 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The stack of the conventional blast furnace _____

Options :

1. is cylindrical

2. widens towards its top

3. widens towards its base

4. is similar to its hearth

Question Number : 34 Question Id : 7621612554 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Basic iron contains _____ content

Options :

1. high sulphur and low phosphorous

2. high phosphorous and low sulphur

3. high silicon and low phosphorous

4. high phosphorous and low silicon

Question Number : 35 Question Id : 7621612555 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The mould of steel ingot is made of _____ in an integrated steel plant

Options :

1. pig iron

2. cast iron

3. steel

4. brass

Question Number : 36 Question Id : 7621612556 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Iron oxide content of _____ slag is the lowest .

Options :

1. Blast furnace

2. Electric reduction furnace

3. Open hearth

4. LD

Question Number : 37 Question Id : 7621612557 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Direct reduction of iron ore is possible in _____

Options :

1. Blast furnace

2. Low shaft furnace

3. Cupola

4. Electric reduction furnace

Question Number : 38 Question Id : 7621612558 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If two systems P and Q are in thermal equilibrium with a third system M, then P and Q will also be in thermal equilibrium with each other. For this statement which of the following is correct ?

Options :

1. First law of thermodynamics

2. Second law of thermodynamics

3. Third law of thermodynamics

4. Zeorth law of thermodynamics

Question Number : 39 Question Id : 7621612559 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following metals cannot be electroplated from aqueous electrolyte?

Options :

1. Al
2. Cu
3. Ni
4. Zn

Question Number : 40 Question Id : 7621612560 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For real gases, the value of $(C_p - C_v)$ is _____ gas constant R.

Options :

1. equal to
2. more than
3. less than
4. independent of

Question Number : 41 Question Id : 7621612561 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a zero order reaction, concentration of product increases with

Options :

1. decrease in total pressure
2. increase in initial concentration
3. increase in reaction time
4. increase in total pressure

Question Number : 42 Question Id : 7621612562 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Half-life period of a first order irreversible reaction, $A \rightarrow B$ is

Options :

1. $\ln (2/k)$
2. $k/2$
3. $\ln (k/2)$
4. $\ln (0.5/k)$

Question Number : 43 Question Id : 7621612563 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The reaction with low activation energy is

Options :

1. slow
2. fast

3. always spontaneous

4. non-spontaneous

Question Number : 44 Question Id : 7621612564 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Intensive thermodynamic variables are

Options :

1. independent of the number of moles in the system

2. dependent on the volume of the system

3. dependent on the mass of the system

4. independent of the temperature

Question Number : 45 Question Id : 7621612565 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For a closed system of fixed internal energy and volume, at equilibrium

Options :

1. Gibb's free energy is minimum

2. Entropy is maximum

3. Helmholtz's free energy is minimum

4. Enthalpy is maximum

Question Number : 46 Question Id : 7621612566 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Diffusion in solid solution is given by

Options :

1. Schrodinger equation

2. Kirkendal effect

3. De Broglie expression

4. Fick's law

Question Number : 47 Question Id : 7621612567 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Energy associated with an electron at absolute zero temperature (which is the maximum value for that electron) is called _____ energy

Options :

1. fermi

2. degenerate

3. ionization

4. electron

Question Number : 48 Question Id : 7621612568 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a three component system at constant pressure, the maximum number of phases that can coexist at equilibrium is

Options :

1. 2
2. 3
3. 4
4. 5

Question Number : 49 Question Id : 7621612569 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Identify the metal that cannot be produced by carbothermic reduction

Options :

1. iron
2. lead
3. tin
4. gold

Question Number : 50 Question Id : 7621612570 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

At the absolute zero temperature, the entropy of every perfectly crystalline substance becomes zero. This follows from

Options :

1. Maxwell's relation
2. Hess' law
3. Second law of thermodynamics
4. Third law of thermodynamics

Question Number : 51 Question Id : 7621612571 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In Ellingham diagram the slope(s) of the line(s) represent

Options :

1. ΔS°
2. $-\Delta S^\circ$
3. ΔH°
4. $-\Delta H^\circ$

Question Number : 52 Question Id : 7621612572 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Coating of zinc over steel is known as

Options :

1. cladding
2. galvanizing
3. anodizing
4. passivating

Question Number : 53 Question Id : 7621612573 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Unsteady state heat conduction occurs, when the

Options :

1. temperature distribution is independent of time
2. temperature distribution is dependent of time
3. heat flows in one direction only
4. heat flow in multi direction

Question Number : 54 Question Id : 7621612574 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

According to the Clausius - Clapeyron equation, the melting point of aluminium

Options :

1. increases linearly with pressure
2. decreases linearly with pressure
3. increases exponentially with pressure
4. does not vary with pressure

Question Number : 55 Question Id : 7621612575 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A system is formed by decomposition of pure solid $CaCO_3$ in vacuum. The number of degree(s) of freedom is/are

Options :

1. Zero
2. 1
3. 2
4. 3

Question Number : 56 Question Id : 7621612576 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a process is chemical reaction controlled, it means

Options :

1. diffusion is fast

2. chemical reaction is fast

3. chemical reaction is slow

4. external mass transfer is low

Question Number : 57 Question Id : 7621612577 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Convective heat transfer, in which heat is transferred by movement of warmed matter is described by

Options :

1. Fourier's law

2. Newton's law of cooling

3. Fick's law

4. Stefan-Boltzmann law

Question Number : 58 Question Id : 7621612578 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A typical example of the intensive property of a system is its _____

Options :

1. mass

2. volume

3. energy

4. pressure

Question Number : 59 Question Id : 7621612579 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The point at which both liquid and gaseous phases are identical, is called _____ point

Options :

1. critical

2. triple

3. freezing

4. boiling

Question Number : 60 Question Id : 7621612580 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The enthalpy of a chemical element in the standard state at 0° C is

Options :

1. 0
2. 1
3. 5
4. 10

Question Number : 61 Question Id : 7621612581 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If a gas is expanded _____ then there is no interchange of heat between the gas and any other body

Options :

1. adiabatically
2. isothermally
3. in an air-tight container
4. in an inert gas atmosphere

Question Number : 62 Question Id : 7621612582 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Bronze is an alloy of copper and

Options :

1. lead
2. tin
3. nickel
4. zinc

Question Number : 63 Question Id : 7621612583 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Aluminium atoms occupy _____ percent of the volume of the cube in a unit cell of

aluminium

Options :

1. 68
2. 74
3. 80
4. 94

Question Number : 64 Question Id : 7621612584 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The material used in the filament of electric bulbs is

Options :

1. tungsten
2. nichrome
3. constantan

4. german silver

Question Number : 65 Question Id : 7621612585 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In case of closed packed structures, octahedral voids have a co-ordination of

Options :

1. 4

2. 8

3. 6

4. 12

Question Number : 66 Question Id : 7621612586 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Scanning electron microscopy is a convenient technique to observe a fibrous fracture surface because

Options :

1. it gives good looking pictures

2. it offers observation under vacuum

3. its depth of focus helps in obtaining greater details

4. it offers higher magnification than light microscope

Question Number : 67 Question Id : 7621612587 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The peritectic reaction in binary system in which L is liquid and α, β, γ are solids is given by

Options :

1. $L = \alpha + \beta$

2. $\alpha = L + \beta$

3. $\gamma = \alpha + \beta$

4. $L + \alpha = \beta$

Question Number : 68 Question Id : 7621612588 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The condition of diffraction from a crystal is given by

Options :

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

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

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

4. $n\lambda = d \sin\theta$

Question Number : 69 Question Id : 7621612589 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which one of the following alloy systems exhibits complete solid solubility?

Options :

1. Cu-Ni
2. Fe-Cu
3. Pb-Sn
4. Cu-Zn

Question Number : 70 Question Id : 7621612590 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Wood is naturally occurs as

Options :

1. malleable material
2. composite material
3. ceramic material
4. isotropic material

Question Number : 71 Question Id : 7621612591 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Driving force for grain growth after completion of recrystallization is

Options :

1. stored energy of cold work
2. vacancy concentration
3. dislocation density in the crystal
4. grain boundary curvature

Question Number : 72 Question Id : 7621612592 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The ASTM grain size number of a material which shows 256 grains per square inch at a magnification of 100X is

Options :

1. 5
2. 6
3. 9
4. 8

Question Number : 73 Question Id : 7621612593 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Curie temperature is the temperature at which _____ changes to _____

Options :

1. ferromagnetic phase, paramagnetic phase
2. ferrimagnetic phase, ferromagnetic phase
3. anti-ferromagnetic phase, ferrimagnetic phase
4. ferromagnetic phase, ferrimagnetic phase

Question Number : 74 Question Id : 7621612594 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For an ideal hexagonal-closed packed structure, the respective values of c/a ratio and packing efficiency are

Options :

1. 1.633 and 52%
2. 1.633 and 74%
3. 1.733 and 68%
4. 1.733 and 74%

Question Number : 75 Question Id : 7621612595 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following has body centered cubic (BCC) lattice of crystals?

Options :

1. Na
2. Zn
3. Ag
4. Pb

Question Number : 76 Question Id : 7621612596 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The atomic diameter of an FCC crystal (having lattice parameter a) is

Options :

1. $a/\sqrt{2}$
2. $a/2\sqrt{2}$
3. $a\sqrt{3}/4$
4. $a/2$

Question Number : 77 Question Id : 7621612597 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The preferred slip plane for FCC is

Options :

1. (100)

2. (110)

3. (111)

4. (000)

Question Number : 78 Question Id : 7621612598 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Percentage of silver in German silver is

Options :

1. 5

2. 10

3. 20

4. 0

Question Number : 79 Question Id : 7621612599 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following surface hardening method do not change the composition of the surface of a steel?

Options :

1. Carburizing

2. Boronizing

3. Laser hardening

4. Nitriding

Question Number : 80 Question Id : 7621612600 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

If the grain diameter increases, then yield strength of metal

Options :

1. decreases

2. increases

3. remains constant

4. increases and then decreases

Question Number : 81 Question Id : 7621612601 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The Larson-Miller parameter P connecting the temperature T and the rupture time t_r is given as

Options :

1. $P = T\,(\log t_r + C)$

2. $P = \log t_r - C/T$

3. $P = (C\text{-}T)/t_r$

4. $P = T \log t_r$

Question Number : 82 Question Id : 7621612602 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Dislocation in materials refer to the

Options :

1. point defect

2. line defect

3. chemical defect

4. plane defect

Question Number : 83 Question Id : 7621612603 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The fracture toughness of lower strength ductile material is best measured using the following experimental method

Options :

1. K_{IC} evaluation

2. J-integral method

3. Dynamic impact testing

4. Tensile testing

Question Number : 84 Question Id : 7621612604 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Hot working of lead is carried out at

Options :

1. room temperature

2. 50°C

3. 200°C

4. 300°C

Question Number : 85 Question Id : 7621612605 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A truly sessile dislocation in a face-centered cubic material is

Options :

1. Shockley partial

2. Lomer dislocation

3. Frank partial

4. Lomer-Cottrel dislocation

Question Number : 86 Question Id : 7621612606 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

An ingot is hot forged to a 50% reduction in cross-section area. The percentage reduction in the volume for the above process is

Options :

1. 50
2. 25
3. 0
4. 15

Question Number : 87 Question Id : 7621612607 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The indenter used in the Vickers hardness test is

Options :

1. 10 mm diameter steel ball
2. square base diamond pyramid (included angle 136° between opposite faces)
3. 3.2 mm diameter steel ball
4. 120° diamond cone with a slightly rounded point

Question Number : 88 Question Id : 7621612608 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cross slip is prevalent in materials with

Options :

1. high stacking fault energy
2. high grain boundary energy
3. low stacking fault energy
4. low grain boundary energy

Question Number : 89 Question Id : 7621612609 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

With ε = true plastic strain and n = strain-hardening coefficient, necking in a cylindrical tensile specimen of a work-hardening metal occurs when

Options :

1. $\varepsilon = n$
2. $\varepsilon = 2n$
3. $\varepsilon = n^{0.5}$

4. $\varepsilon = n^2$

Question Number : 90 Question Id : 7621612610 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Fatigue resistance of a steel decreases by

Options :

1. decarburization

2. polishing the surface

3. shot peening

4. reducing the grain size

Question Number : 91 Question Id : 7621612611 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a tensile test of a ductile material, necking starts at

Options :

1. upper yield point

2. ultimate tensile strength

3. lower yield point

4. just before fracture

Question Number : 92 Question Id : 7621612612 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A defect that is bounded by two mirror planes is

Options :

1. twin

2. stacking fault

3. grain boundary

4. edge dislocation

Question Number : 93 Question Id : 7621612613 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

A property that can be obtained from fatigue test is

Options :

1. Young's modulus

2. Yield strength

3. Ultimate tensile strength

4. Endurance limit

Question Number : 94 Question Id : 7621612614 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In fracture toughness characterized by K_{IC}, I in the subscript indicates loading by

Options :

1. crack opening mode
2. forward shear mode
3. parallel shear mode
4. perpendicular shear mode

Question Number : 95 Question Id : 7621612615 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The engineering stress-strain curve for a ceramic material is

Options :

1. parabolic
2. exponential
3. logarithmic
4. linear

Question Number : 96 Question Id : 7621612616 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Number of potential slip systems in FCC structure is

Options :

1. 6
2. 12
3. 24
4. 48

Question Number : 97 Question Id : 7621612617 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The yield point phenomenon observed in low carbon steel is due to the presence of

Options :

1. silicon
2. chromium
3. phosphorus
4. carbon

Question Number : 98 Question Id : 7621612618 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The appearance of inter crystalline fracture suggests that the following mechanism is

Options :

1. ductile fracture

2. brittle cleavage fracture

3. fatigue failure

4. high temperature creep failure

Question Number : 99 Question Id : 7621612619 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Nil ductility temperature is that below which

Options :

1. fracture is 100% cleavage

2. fracture is 50% cleavage and 50% shear

3. energy absorbed will be maximum

4. fracture surface shows fibrous character

Question Number : 100 Question Id : 7621612620 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Stress causing a deformation of _____ percent is called the yield strength.

Options :

1. 0.01

2. 0.5

3. 0.2

4. 4

Question Number : 101 Question Id : 7621612621 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Burgers vector is _____ to the edge dislocation

Options :

1. Perpendicular

2. horizontal

3. parallel

4. angular

Question Number : 102 Question Id : 7621612622 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

On decreasing the grain size of polycrystalline material, the property most likely to deteriorate is

Options :

1. fatigue

2. yield strength

3. tensile strength

4. creep

Question Number : 103 Question Id : 7621612623 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In rolling, when a material is severely deformed in a particular direction, it becomes

Options :

1. ductile

2. anisotropic

3. isotropic

4. homogeneous

Question Number : 104 Question Id : 7621612624 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Rate of recrystallization increases with

Options :

1. decrease of the percentage of cold work

2. increase of percentage of cold work

3. there is no effect of cold work

4. decrease of annealing time

Question Number : 105 Question Id : 7621612625 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a destructive test?

Options :

1. Tensile test

2. Impact test

3. Radiography

4. Brinell hardness test

Question Number : 106 Question Id : 7621612626 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Classification of metal forming processes into hot and cold working is based on which one

of the following parameter?

Options :

1. stacking fault energy

2. re-crystallization temperature

3. solidus temperature

4. transformation temperature

Question Number : 107 Question Id : 7621612627 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Cold forming of a part has the advantage of

Options :

1. close tolerance as no shrinkage occurs

2. application of lower deformation force

3. grain refinement

4. elimination of post heat treatment requirement.

Question Number : 108 Question Id : 7621612628 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

In a sound casting, the last liquid to solidify is in the

Options :

1. runner

2. riser

3. gate

4. vent

Question Number : 109 Question Id : 7621612629 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The NDT technique used to detect deep lying defects in a large sized casting is

Options :

1. liquid penetrant inspection

2. magnetic particle inspection

3. ultrasonic inspection

4. eddy current inspection

Question Number : 110 Question Id : 7621612630 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

X-ray radiography is used to determine the

Options :

1. crystal structure

2. chemical composition

3. soundness of casting

4. phases present

Question Number : 111 Question Id : 7621612631 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Which of the following is not a solid state welding process?

Options :

1. friction stir welding
2. ultrasonic welding
3. explosive welding
4. arc welding

Question Number : 112 Question Id : 7621612632 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Draft allowance given to patterns is for

Options :

1. compensating the liquid state shrinkage
2. easy removal of pattern from the mold cavity
3. providing support for the core placement
4. compensating the solidification shrinkage

Question Number : 113 Question Id : 7621612633 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Preheating of steel plate during welding is required to

Options :

1. reduce the heat input
2. increase the heat input
3. increase the cooling rate
4. decrease the cooling rate

Question Number : 114 Question Id : 7621612634 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the manufacture of thin foils of aluminium, rolling mill used is

Options :

1. three-high rolling mill
2. sendzimir mill
3. four stand continuous mill
4. planetary mill

Question Number : 115 Question Id : 7621612635 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Alternating current is preferred in tungsten inert gas welding of aluminium alloys, because

Options :

1. it helps removing aluminium oxide

2. direct current results in erratic arc

3. it helps improving ductility of welds

4. it reduces cost

Question Number : 116 Question Id : 7621612636 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For the occurrence of bite in rolling which of the following condition should be satisfied

Options :

1. the roll separating force should reach a maximum value

2. the coefficient of friction should exceed the tangent of the contact angle

3. the friction coefficient should be zero

4. the contact length should be minimum

Question Number : 117 Question Id : 7621612637 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Brazing filler metal used for joining steel plates

Options :

1. melts below the melting point of base metals

2. melts below 300°C

3. is copper-phosphorous alloy

4. is copper

Question Number : 118 Question Id : 7621612638 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

For obtaining 100% theoretical density, which of the following compaction process is used

in powder metallurgy?

Options :

1. double ended compaction

2. hot isostatic pressing

3. cold isostatic pressing

4. powder extrusion

Question Number : 119 Question Id : 7621612639 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

The formation of earing defect in deep drawing is due to which of the following reason?

Options :

1. improper punch and die alignment

2. dynamic strain ageing

3. crystallographic texture

4. faster press speed

Question Number : 120 Question Id : 7621612640 Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Internal cracks in drawn bars are due to

Options :

1. secondary tensile stresses

2. temperature gradient in the work piece

3. heated dies and grips

4. internal compressive residual stresses