

Telangana State Council Higher Education

Notations :

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

Question Paper Name :	Metallurgical Engineering 13th Aug 2021 Shift 2
Subject Name :	Metallurgical Engineering
Creation Date :	2021-08-13 17:43:11
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Calculator :	None
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console? :	Yes

Metallurgical Engineering

Group Number :	1
Group Id :	12984027
Group Maximum Duration :	0
Group Minimum Duration :	120

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

Mathematics

Section Id :	12984047
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	12984047
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 1298403121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 1 & 4 \\ 5 & 1 & 2 \end{bmatrix}$, then an Eigen value of $A - A^T$ is

Options :

1. ✓ 0
2. ✗ 1
3. ✗ -1
4. ✗ 2

Question Number : 2 Question Id : 1298403122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $A = \begin{bmatrix} 0 & 1 & 2 \\ 2 & -1 & 3 \\ -1 & 0 & 2 \end{bmatrix}$, then $A^4 - A^3 + 9A =$

Options :

1. ✗ A^2

2. ✘ $3A^2$

3. ✔ $2A^2$

4. ✘ $-2A^2$

Question Number : 3 Question Id : 1298403123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Local maximum of $(x^2 + y^2) e^{x+y}$ subjected to $x = y$ is attained at the point

Options :

1. ✘ $(1, -1)$

2. ✘ $(1, 1)$

3. ✘ $(-1, 1)$

4. ✔ $(-1, -1)$

Question Number : 4 Question Id : 1298403124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Let $a_n = \sum_{k=1}^n \frac{3k^2 + 3k + 1}{k^3 (k+1)^3}$, then $\lim_{n \rightarrow \infty} a_n =$

Options :

1. ✘ 0

2. ✔ 1

3. ✘ ∞

4. ✘ $-\infty$

Question Number : 5 Question Id : 1298403125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If $\nabla^2 \left(\frac{1}{2} \log(x^2 + y^2 + z^2) \right) = \frac{k}{x^2 + y^2 + z^2}$, then $k =$

Options :

1. ✔ 1

2. ✘ 2

3. ✘ 3

4. ✘ 4

Question Number : 6 Question Id : 1298403126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The solution of $(D^2 - DD' - 2D'^2) z = 0$ is $z = f(y + ax) + g(y + bx)$, where $(a, b) =$
(Here f & g are arbitrary)

Options :

1. ✘ $(1, -2)$

2. ✔ $(-1, 2)$

3. ✘ $(1, 2)$

4. ✘ $(-1, -2)$

Question Number : 7 Question Id : 1298403127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Suppose A, B and C are mutually exclusive and exhaustive events such that $P(A) = 2 P(B) = 3 P(C)$. Then $P(A \cup B) =$

Options :

1. $\frac{9}{11}$

2. $\frac{8}{11}$

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

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

Question Number : 8 Question Id : 1298403128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Given y_0, y_1, y_2, y_3 and $\frac{dy}{dx} = f(x, y)$, the value of y_4 by Milne Simpson method is

Options :

$$y_3 + \frac{h}{3} [f_4 + 4f_3 + f_2]$$

1. ✘

$$y_3 + \frac{h}{3} [f_4 + 4f_3 + f_2 + f_1]$$

2. ✘

$$y_2 + \frac{h}{3} [f_4 + 4f_3 + f_2 + f_1]$$

3. ✘

$$y_2 + \frac{h}{3} [f_4 + 4f_3 + f_2]$$

4. ✔

Question Number : 9 Question Id : 1298403129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If X is a Poisson variate with $P(X = 3) = P(X = 4)$ then the mean is

Options :

1. ✘ 1

2. ✘ 2

3. ✘ 3

4. ✓ 4

Question Number : 10 Question Id : 1298403130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

$$\lim_{x \rightarrow 0} \frac{e^x - x - 1}{xe^x - x} =$$

Options :

1. ✗ 1

2. ✓ $\frac{1}{2}$

3. ✗ $\frac{1}{3}$

4. ✗ $\frac{1}{6}$

Metallurgical Engineering

Section Id :

12984048

Section Number :

2

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	12984048
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 1298403131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

During the solidification of pure metal, it was found that dendrites are formed. Assuming that the liquid-solid interface is at the melting temperature, the temperature from the interface into the liquid

Options :

1. ✓ Decreases
2. ✗ Increases
3. ✗ Remains constant
4. ✗ Increases and then decreases

Question Number : 12 Question Id : 1298403132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Schottky-defect in ceramic material is

Options :

1. ✘ Interstitial impurity
2. ✘ Vacancy- interstitial pair of cations
3. ✔ Pair of nearby cation and anion vacancies
4. ✘ Substitutional impurity

Question Number : 13 Question Id : 1298403133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Pick the composite from the list

Options :

1. ✔ Ply Wood
2. ✘ Steel
3. ✘ Nylon
4. ✘ Mica

Question Number : 14 Question Id : 1298403134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a furnace with heating element temperature at 1700°C , the dominant mechanism of heat transfer will be

Options :

1. ✘ Conduction
2. ✔ Radiation
3. ✘ Natural convection
4. ✘ Forced convection

Question Number : 15 Question Id : 1298403135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Thermal conductivity of non-metallic amorphous solids with decrease in temperature

Options :

1. ✘ Increases
2. ✔ Decreases

3. ✘ Remains constant
4. ✘ May increase or decrease depending on temperature

Question Number : 16 Question Id : 1298403136 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the electrolytic refining of copper, Ag and Au are found

Options :

1. ✘ On anode
2. ✘ In electrolyte solution
3. ✔ In anode mud
4. ✘ In cathode mud

Question Number : 17 Question Id : 1298403137 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Glass wool is used for

Options :

1. ✘ Mirror

2. ✘ Lenses for spectacles
3. ✘ Bullet proof glasses
4. ✔ Heat insulation

Question Number : 18 Question Id : 1298403138 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following process of steel making is in operation at Tata Iron and Steel Works, Jamshedpur

Options :

1. ✘ Bessemer
2. ✘ Electric
3. ✔ Duplex
4. ✘ Open hearth

Question Number : 19 Question Id : 1298403139 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In electrochemical cells, the electrode at which the reduction occurs is called

Options :

1. ✘ Anode
2. ✔ Cathode
3. ✘ Electrolyte
4. ✘ Electrolysis

Question Number : 20 Question Id : 1298403140 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Crystal structure of a material is, generally, examined by

Options :

1. ✘ Naked eye
2. ✘ Optical microscope
3. ✘ Metallurgical microscope
4. ✔ X-ray Diffraction

Question Number : 21 Question Id : 1298403141 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Consider the following statements:

1. Zeroth law of thermodynamics is related to temperature
2. Entropy is related to first law of thermodynamics
3. Internal energy of an ideal gas is a function of temperature and pressure
4. Van der Waals' equation is related to an ideal gas

Which of the above statements is/are correct?

Options :

1. ✘ 1 only
2. ✘ 2, 3 and 4
3. ✘ 1 and 3
4. ✔ 2 and 4

Question Number : 22 Question Id : 1298403142 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

With decrease in temperature thermal conductivity of non-metallic amorphous solids

Options :

1. ✘ Increases
2. ✔ Decreases
3. ✘ Remains constant
4. ✘ May increase or decrease depending on temperature

Question Number : 23 Question Id : 1298403143 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the standard notation for a voltaic cell, the double vertical line "||" represents:

Options :

1. ✘ A phase boundary
2. ✘ Gas electrode
3. ✘ A wire (metal) connection
4. ✔ A salt bridge

Question Number : 24 Question Id : 1298403144 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following gas welding uses constant voltage welding?

Options :

1. ✘ Submerged arc welding
2. ✘ Tungsten inert gas welding
3. ✘ Stud welding
4. ✔ Metal Inert Gas welding

Question Number : 25 Question Id : 1298403145 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

All the three modes of heat transmission are involved in:

Options :

1. ✘ Melting of ice
2. ✘ Cooling of small metal casting in a quenching bath
3. ✘ Heat flow through the walls of a refrigerator

4. ✓ Automobile engine equipped with a thermo-siphon cooling system

Question Number : 26 Question Id : 1298403146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Granular form of flux is used in _____

Options :

1. ✓ Submerged arc welding
2. ✗ TIG welding
3. ✗ MIG welding
4. ✗ Shielded metal arc welding

Question Number : 27 Question Id : 1298403147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Presence of sodium oxide in entrapment associated with defect is traced to

Options :

1. ✓ Mould Slag

2. ✘ Ladle Slag
3. ✘ Deoxidation Product
4. ✘ Reoxidation Product

Question Number : 28 Question Id : 1298403148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

“Killing” of liquid steel is essential to control:

Options :

1. ✘ Soluble S
2. ✘ Soluble N
3. ✘ Soluble C
4. ✔ Soluble O

Question Number : 29 Question Id : 1298403149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In free convection heat transfer, transition from laminar to turbulent flow is governed by the critical value of the

Options :

1. ✘ Reynolds number, Grashoff's number
2. ✔ Prandtl number, Grashoff's number
3. ✘ Reynolds number
4. ✘ Grashoff's number

Question Number : 30 Question Id : 1298403150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An electrochemical cell in which a fuel gives up electrons at one electrode and oxygen gains electrons at other electrode, is known as

Options :

1. ✔ Fuel cell
2. ✘ Electrolytic cell
3. ✘ Oxygen cell

4. ✘ Electron cell

Question Number : 31 Question Id : 1298403151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following has a fine gold color and is used for imitation jewellery

Options :

1. ✘ Silicon Bronze
2. ✔ Aluminum bronze
3. ✘ Gun metal
4. ✘ Babbitt metal

Question Number : 32 Question Id : 1298403152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Rockwell hardness on the C scale is measured using an indenter with a

Options :

1. ✔ 120° diamond cone with a slightly rounded tip

2. ✘ Square base diamond pyramid
3. ✘ 10 mm diameter steel ball
4. ✘ 3 mm diameter steel ball

Question Number : 33 Question Id : 1298403153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0
A soft magnetic material should have

Options :

1. ✘ High coercivity
2. ✘ High energy product
3. ✔ High permeability
4. ✘ High retentivity

Question Number : 34 Question Id : 1298403154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following examples indicates unsteady flow process

Options :

1. ✘ Flow through turbine
2. ✘ Flow through delivery pipe of reciprocating pump
3. ✘ Mixing of three fluid streams
4. ✔ Inflating tyres of a bicycle.

Question Number : 35 Question Id : 1298403155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Dow process is used in the extraction of

Options :

1. ✘ Aluminum
2. ✔ Magnesium
3. ✘ Zinc
4. ✘ Lead

Question Number : 36 Question Id : 1298403156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Specify the sequence correctly

Options :

1. ✘ Stress relief, grain growth, recrystallisation
2. ✘ Grain growth, recrystallisation, stress relief
3. ✔ Stress relief, recrystallisation, grain growth
4. ✘ Grain growth, stress relief, recrystallisation

Question Number : 37 Question Id : 1298403157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A mould made up of dried silica sand and phenolic resin is used in

Options :

1. ✘ Investment moulding
2. ✔ Shell moulding

3. ✘ Centrifugal casting

4. ✘ Die casting

Question Number : 38 Question Id : 1298403158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Extensive properties of a thermodynamic system depend upon the _____ of the system

Options :

1. ✘ Temperature

2. ✔ Mass

3. ✘ Specific volume

4. ✘ Pressure

Question Number : 39 Question Id : 1298403159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Ternary stage creep is associated with _____

Options :

1. ✘ Strain hardening
2. ✘ Recovery
3. ✔ Necking
4. ✘ Recrystallization

Question Number : 40 Question Id : 1298403160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For super plasticity the strain rate of material is

Options :

1. ✔ Low
2. ✘ Variable
3. ✘ High
4. ✘ Constant

Question Number : 41 Question Id : 1298403161 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Creep mechanism that is operational at stresses $10^{-2} > \sigma/G > 10^{-4}$ _____

Options :

1. ✓ Dislocation creep
2. ✗ Dislocation glide
3. ✗ Diffusion creep
4. ✗ GB sliding

Question Number : 42 Question Id : 1298403162 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Thermoplastic materials are those materials which

Options :

1. ✗ Are flexible and can withstand considerable wear under suitable conditions
Do not become hard with the application of heat and pressure and no
2. ✓ chemical change occurs

- Are formed into shape under heat and pressure and results in a permanently hard product
3. ✘
- Are used as a friction lining for clutches and brakes
4. ✘

Question Number : 43 Question Id : 1298403163 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the surface crack causing fracture in a brittle material is made twice as deep, the fracture strength will

Options :

1. ✔ Decrease by a factor of $\sqrt{2}$
2. ✘ Decrease by a factor of 2
3. ✘ Decrease by a factor of 2^2
4. ✘ Remains Same

Question Number : 44 Question Id : 1298403164 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Identify the correct combination of the following statements

P - Hydrogen electrode is a standard used to measure redox potentials

Q - Activation polarization refers to electrochemical processes controlled by reaction sequence at metal-solution interface

R - Potential-pH diagrams can be used to predict corrosion rates of metals

S - Cathodic protection can use sacrificial anodes such as magnesium

Options :

1. ✘ P, Q and R

2. ✘ Q, R and S

3. ✔ P, Q and S

4. ✘ P, R and S

Question Number : 45 Question Id : 1298403165 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Coordination number in simple cubic crystal structure is

Options :

1. ✘ 1

2. ✔ 2

3. ✘ 3

4. ✘ 4

Question Number : 46 Question Id : 1298403166 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

An eutectoid steel consists of

Options :

1. ✘ Pearlite and ferrite

2. ✔ Wholly pearlite

3. ✘ Wholly austenite

4. ✘ Pearlite and cementite

Question Number : 47 Question Id : 1298403167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Example for steady-state diffusion

Options :

1. ✔ Hydrogen purification by palladium sheet

2. ✘ Doping semi-conductors
3. ✘ Corrosion resistance of duralumin
4. ✘ Decarburization of steel

Question Number : 48 Question Id : 1298403168 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A family of directions is represented by

Options :

1. ✘ (hkl)
2. ✔ $\langle uvw \rangle$
3. ✘ $\{hkl\}$
4. ✘ $[uvw]$

Question Number : 49 Question Id : 1298403169 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fracture stress is proportional to

Options :

1. ✓ $1/\sqrt{\text{crack length}}$
2. ✗ $\sqrt{\text{crack length}}$
3. ✗ $1/\text{crack length}$
4. ✗ crack length

Question Number : 50 Question Id : 1298403170 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The energy dispersive spectrometer (EDS) in an electron microscope does chemical analysis the energy of

Options :

1. ✗ Secondary electrons
2. ✓ Characteristics X-Rays
3. ✗ Auger electrons

4. ✘ Back Scattered electrons

Question Number : 51 Question Id : 1298403171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In eddy current testing, standard depth of penetration is

Options :

1. ✘ The maximum depth to which eddy currents can penetrate
2. ✘ The depth up to which eddy currents remain constant
3. ✔ The depth where eddy current reduce by 36.8%
4. ✘ Directly proportional to the conductivity of sample

Question Number : 52 Question Id : 1298403172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following material has highest ductility

Options :

1. ✘ Aluminium

2. ✓ Mild steel

3. ✗ Copper

4. ✗ Gold

Question Number : 53 Question Id : 1298403173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The efficiency of the Carnot cycle may be increased by

Options :

1. ✗ Increasing the ambient temperature

2. ✗ Decreasing the highest temperature

3. ✗ Increasing the lowest temperature

4. ✓ Decreasing the lowest temperature

Question Number : 54 Question Id : 1298403174 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Toughness of a material is measured by the area under its _____ curve

Options :

1. ✘ Load-distance
2. ✘ Distance-time
3. ✔ Stress-strain
4. ✘ Stress-time

Question Number : 55 Question Id : 1298403175 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following relation is true for heat convection
[h = convection coefficient, c = specific heat]

Options :

1. ✘ $h_{\text{gas}} = h_{\text{liquid}}$
2. ✘ $h_{\text{gas}} > h_{\text{liquid}}$
3. ✘ $h_{\text{gas}} < c h_{\text{liquid}}$

4. ✓ $h_{\text{gas}} < h_{\text{liquid}}$

Question Number : 56 Question Id : 1298403176 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In the Powder metallurgy processing, the objective of pressing before sintering is to

Options :

1. ✗ Squeeze out the moisture around the powder particles
2. ✗ Further refine the grain size
3. ✗ Break up the oxides around the particles
4. ✓ Compacting the powder particles into mechanical and atomic closeness

Question Number : 57 Question Id : 1298403177 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In welding, the size of the heat effected zone increases with

Options :

1. ✗ Increase in welding speed
2. ✗ Decrease in starting temperature

3. ✓ Increase in starting temperature

4. ✗ Increase in base metal thickness

Question Number : 58 Question Id : 1298403178 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

When a zinc metal rod is immersed in dilute hydrochloric acid, it results in

Options :

1. ✓ Evolution of hydrogen

2. ✗ Evolution of chlorine

3. ✗ Evolution of oxygen

4. ✗ No evolution of any gas

Question Number : 59 Question Id : 1298403179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following element is an austenite stabilizer

Options :

1. ✓ Nitrogen

2. ✘ Molybdenum

3. ✘ Vanadium

4. ✘ Tungsten

Question Number : 60 Question Id : 1298403180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The hardness is the property of a material due to which it

Options :

1. ✘ Can be drawn into wires

2. ✘ Can be rolled or hammered into thin sheets

3. ✔ Can cut another metal

4. ✘ Breaks with little permanent distortion

Question Number : 61 Question Id : 1298403181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Flottation beneficiation is based on the principle of

Options :

1. ✓ Mineral surface hydrophobicity
2. ✗ Gravity difference
3. ✗ Chemical reactivity
4. ✗ Particle size difference

Question Number : 62 Question Id : 1298403182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one is NOT an agglomeration process

Options :

1. ✗ Nodulizing
2. ✗ Briquetting
3. ✓ Roasting
4. ✗ Pelletizing

Question Number : 63 Question Id : 1298403183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

During LD blow in steel making the impurity that gets removed first is

Options :

1. ✘ Carbon
2. ✘ Phosphorous
3. ✘ Manganese
4. ✔ Silicon

Question Number : 64 Question Id : 1298403184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

According to the kinetic theory of gases, the absolute zero temperature is attained when

Options :

1. ✘ Volume of the gas is zero
2. ✘ Pressure of the gas is zero

3. ✘ Kinetic energy of the molecules is zero

4. ✔ Specific heat of gas is zero

Question Number : 65 Question Id : 1298403185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Dye penetrant method is generally used to locate

Options :

1. ✔ Surface defects

2. ✘ Core defects

3. ✘ Metallic Inclusions

4. ✘ Subsurface defects

Question Number : 66 Question Id : 1298403186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

A polymer matrix composite is reinforced with long continuous ceramic fibres aligned in one direction. The Young's moduli of the matrix and fibres are E_m and E_f respectively, and the volume fraction of the fibres is f . Assuming iso-stress condition, Young's modulus of the composite E_c in a direction perpendicular to the length of fibres, is given by the expression

Options :

1. ✘ $E_c = f E_f + (1-f) E_m$
2. ✘ $E_c = (1-f) E_f + f E_m$
3. ✔ $1/E_c = f/E_f + (1-f)/E_m$
4. ✘ $1/E_c = f/E_m + (1-f)/E_f$

Question Number : 67 Question Id : 1298403187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Match list – I (type of casting) with list – II (materials used) and select the correct answer using the codes given below the lists

List – I

list – II

- | | |
|--------------------------|--|
| (i) Die casting | A. Metal solidifies when mould in rotating |
| (ii) Centrifuging | B. Continuously pouring molten metal into mould |
| (iii) Continuous casting | C. Molten metal is forced into the die under pressure |
| (iv) Centrifugal casting | D. Axis of rotation does not coincide with axis of mould |

Options :

1. ✓ i – C, ii – D, iii – B, iv – A

2. ✗ i – A, ii – B, iii – C, iv – D

3. ✗ i – A, ii – D, iii – B, iv – C

4. ✗ i – C, ii – B, iii – D, iv – A

Question Number : 68 Question Id : 1298403188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A 0.2 wt.% plain carbon steel sheet is heated and equilibrated in the inter-critical region followed by instant water quenching. The microstructure of the quenched steel sheet consists of

Options :

1. ✓ Fully martensite
2. ✗ Proeutectoid ferrite + martensite
3. ✗ Martensite + pearlite
4. ✗ Martensite + austenite

Question Number : 69 Question Id : 1298403189 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An alloy steel which is work hardenable and which is used to make the blades of bulldozers, bucket wheel excavators and other earth moving equipment contain iron, carbon and

Options :

1. ✗ Chromium
2. ✗ Silicon

3. ✓ Manganese

4. ✗ Magnesium

Question Number : 70 Question Id : 1298403190 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is receptive to collect the liquid slag and metal

Options :

1. ✗ Bosh

2. ✗ Stack

3. ✗ Tuyere

4. ✓ Hearth

Question Number : 71 Question Id : 1298403191 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Herbert cloudburst Hardness test is conducted to know

Options :

1. ✓ Uniformity of hardness over a surface

2. ✘ Softness of non-metallic components
3. ✘ Hardness of non-metallic components
4. ✘ Hardness at specified depth inside the surface.

Question Number : 72 Question Id : 1298403192 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Magnesium is extruded and not rolled because

Options :

1. ✔ It has a low melting point
2. ✘ It has a low density
3. ✘ Its reactivity with roll material is high
4. ✘ It has a dose-packed hexagonal structure

Question Number : 73 Question Id : 1298403193 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Nano composite materials are highly preferable in design consideration for their

Options :

1. ✘ High resistance to crack propagation
2. ✔ Vibration resistance
3. ✘ Impact resistance
4. ✘ High resilience

Question Number : 74 Question Id : 1298403194 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Decreasing grain size in a polycrystalline material

Options :

1. ✔ Increases yield strength and corrosion resistance
2. ✘ Decreases yield strength and corrosion resistance
3. ✘ Decreases yield strength but increases corrosion resistance
4. ✘ Increases yield strength but decreases corrosion resistance

Question Number : 75 Question Id : 1298403195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following statement is true about brittle fracture

Options :

1. ✘ High temperature and low strain rates favor brittle fracture
2. ✔ Many metal with HCP crystal structure commonly show brittle fracture
3. ✘ Brittle fracture is always preceded by noise
4. ✘ Cup and cone formation is characteristic for brittle materials

Question Number : 76 Question Id : 1298403196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following welding process is used to weld very thin materials

Options :

1. ✘ Friction welding
2. ✘ Ultrasonic welding
3. ✔ Explosive welding

4. ✘ Laser welding

Question Number : 77 Question Id : 1298403197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In regenerator type heat exchanger, heat transfer takes place by

Options :

1. ✘ Direct mixing of hot and cold fluids
2. ✘ A complete separation between hot and cold fluids
3. ✔ Flow of hot and cold fluids alternately over a surface
4. ✘ Generation of heat again and again

Question Number : 78 Question Id : 1298403198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Pattern of atoms arrangements is Hexagonal Closed Packing (HCP) is given by

Options :

1. ✔ A B A B A
2. ✘ A A A A A

3. ✘ ABC ABC

4. ✘ AA BB AA

Question Number : 79 Question Id : 1298403199 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Typical hot working temperature range for steel is

Options :

1. ✔ 650–1050°C

2. ✘ 650–723°C

3. ✘ 400–600°C

4. ✘ 910–1050°C

Question Number : 80 Question Id : 1298403200 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

“Alligatoring” is a defect associated with

Options :

1. ✘ Forging process

2. ✘ Casting process
3. ✘ Extrusion process
4. ✔ Rolling process

Question Number : 81 Question Id : 1298403201 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is a surface imperfection, which separates crystals of different orientations in a poly-crystalline aggregate, called

Options :

1. ✘ Edge dislocation
2. ✘ Stacking fault
3. ✔ Grain boundary
4. ✘ Screw dislocation

Question Number : 82 Question Id : 1298403202 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Presence of hydrogen in steel causes

Options :

1. ✘ Reduced neutron absorption cross-section
2. ✘ improved weldability

✘

3. ✓ Embrittlement

4. Corrosion resistance

Question Number : 83 Question Id : 1298403203 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In a eutectic system, two elements are completely _____

Options :

1. ✗ Insoluble in solid and liquid states

2. ✓ Soluble in liquid state

3. ✗ Soluble in solid state

4. ✗ Insoluble in liquid state

Question Number : 84 Question Id : 1298403204 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The blade of a power saw is made of _____

✗

Options :

1. ✘ Boron steel
2. ✔ High speed steel
3. Stainless steel
4. ✘ Malleable cast iron

Question Number : 85 Question Id : 1298403205 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following composites are 'dispersion-strengthened composites'

Options :

1. ✔ Particle reinforced composites
2. ✘ Laminar composites
3. ✘ Fiber reinforced composites
4. ✘ Short-fiber discontinuous composites

✘

Question Number : 86 Question Id : 1298403206 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is true

Options :

1. ✘ Structure of metallic materials consists of atoms having valence of 5, 6 or 7
2. Ceramic materials have long range electron matrix bond



3. ✓ Polymers are composed of long chain of repeating molecules

4. ✗ Ceramics are weaker than metals because of weak electrostatic bond

Question Number : 87 Question Id : 1298403207 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following is correct?

When "devitrification" of inorganic glasses is done,

Options :

1. ✗ Glass transforms from crystalline to non-crystalline state

2. ✗ Glass transforms into a fully transparent material

3. ✓ Glass transforms from non-crystalline state to poly-crystalline state

4. ✗ Glass is relieved of internal stresses

Question Number : 88 Question Id : 1298403208 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Electromigration in an Integrated Circuits refers to

Options :

1. ✓ Grain boundary diffusion of Al in Al interconnections
2. ✗ Grain boundary diffusion of Cu in Al interconnections
3. ✗ Diffusion of Si in Al interconnections
4. ✗ Diffusion of oxygen in Si

Question Number : 89 Question Id : 1298403209 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Duralumin is primarily an alloy of

Options :

1. ✗ Aluminium with 4% Iron
2. ✗ Aluminium with 4% Magnesium
3. ✗ Aluminium with 4% Zinc
4. ✓ Aluminium with 4% Copper

Question Number : 90 Question Id : 1298403210 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following minerals is a source of Lead

Options :

1. ✘ Calomal
2. ✘ Malachite
3. ✔ Cerrusite
4. ✘ Pyrolysite

Question Number : 91 Question Id : 1298403211 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For a real thermodynamic cycle, which one of the following is correct

Options :

1. ✘ $\int dQ/T > 0$
2. ✘ $\int dQ/T = 0$

3. ✘ $\int ds = 0$

4. ✔ $\int dQ/T < 0$

Question Number : 92 Question Id : 1298403212 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Electrometallurgy is a process of metal extraction which is

Options :

1. ✘ Cheap and gives high purity metal

2. ✘ Expensive and gives low purity metal

3. ✔ Expensive but gives high purity metal

4. ✘ Cheap but gives low purity metal

Question Number : 93 Question Id : 1298403213 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Aluminum-Silicon alloys belong to

Options :

1. ✘ 3xxx series
2. ✔ 4xxx series
3. ✘ 5xxx series
4. ✘ 2xxx series

Question Number : 94 Question Id : 1298403214 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The process called _____ produces a clear, transparent coating containing submicroscopic pores that are usually sealed before use to prevent absorption and staining

Options :

1. ✘ Carburizing
2. ✘ Galvanizing
3. ✔ Anodizing
4. ✘ Boronizing

Question Number : 95 Question Id : 1298403215 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The malleability of a material is the property by virtue of which it can be rolled or hammered into thin sheets. Which of the following materials has the maximum malleability


Options :

1. ✓ Lead



2. Aluminum

3. Copper

4.  Wrought iron


Question Number : 96 Question Id : 1298403216 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Metal with 60% Copper and 40% Zinc is called

Options :

1.  Gun Metal

2.  Admiralty brass

3.  Monel

4.  Muntz metal



Question Number : 97 Question Id : 1298403217 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Refined acetic acid storage vessels are made of

Options :

1. Nickel
2. Copper
3. ✓ Aluminum
4. ✗ High carbon steel

Question Number : 98 Question Id : 1298403218 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

✘

✘

Match list I (heat treatment process) with list II (process characteristics) and the select the correct answer using the codes given below:

List – I

List – II

P- Tempering
Q- Austempering
R- Martempering

A - Austenite - Bainite
B - Austenite - Martensite
C - Cementite – Globular Structure
D - Hardens and Brittleness reduced

Options :

1. ✓ P-D, Q-A, R-B

2. ✘ P-D, Q-C, R-A

3. P-D, Q-B, R-A

4. P-B, Q-C, R-D

Question Number : 99 Question Id : 1298403219 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

✘

✘

Which one of the following welding processes uses a non-consumable electrode

Options :

1. ✓ Gas tungsten arc welding
2. ✘ Gas metal arc welding
3. ✘ Submerged arc welding
4. ✘ Flux cored arc welding

Question Number : 100 Question Id : 1298403220 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which one of the following can give information about the corrosion rate

Options :

1. ✘ Pourbaix diagram

2. ✓ Polarization technique

3. ✗ EMF series

4. ✗ Galvanic series

Question Number : 101 Question Id : 1298403221 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The ability of a material to absorb energy in the plastic range is called

Options :

1. ✗ Toughness

2. ✓ Resilience

3. ✗ Creep

4. ✗ Fatigue strength

Question Number : 102 Question Id : 1298403222 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is used as a coolant in basic oxygen furnace (BOF) steel making

Options :

1. ✘ Flux
2. ✘ Cold pig iron
3. ✔ Scrap
4. ✘ Sunter

Question Number : 103 Question Id : 1298403223 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For an FCC metal, the ratio of interplanar spacing obtained from the first two peaks of the X-rays diffraction pattern is

Options :

1. ✘ 1.91
2. ✘ 1.63
3. ✘ 1.41

4. ✓ 1.15

Question Number : 104 Question Id : 1298403224 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The energy of the radiation field is transported by

Options :

1. ✗ Bulk motion of molecules
2. ✗ Random motion of molecules
3. ✓ Photons
4. ✗ Solid molecules

Question Number : 105 Question Id : 1298403225 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For inspection of castings, the type of rays used in radiography are

Options :

1. ✓ X- rays

2. ✘ Infrared rays

3. ✘ Ultraviolet rays

4. ✘ Visible rays

Question Number : 106 Question Id : 1298403226 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Under Microscope Pearlite appears as

Options :

1. ✘ Dark

2. ✘ White

3. ✘ Light

4. ✔ Finger Print

Question Number : 107 Question Id : 1298403227 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The forging operation of “upsetting” is

Options :

1. ✓ Reverse of drawing down process
2. ✗ It is a bending operation
3. ✗ It is a drifting operation
4. ✗ It is a twisting operation

Question Number : 108 Question Id : 1298403228 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Martensite in steel is

Options :

1. ✗ An interstitial solid solution of C in alpha iron
2. ✓ Supersaturated interstitial solution of C in BCT iron
3. ✗ Supersaturated solid solution of C in gamma iron
4. ✗ A very finely dispersed lamellar structure

Question Number : 109 Question Id : 1298403229 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For an opaque surface, the absorptivity (α), transmissivity (τ) and reflectivity (ρ) are related by the equation:

Options :

1. ✘ $\alpha + \rho = \tau$
2. ✔ $\alpha + \rho = 1$
3. ✘ $\rho + \alpha + \tau = 0$
4. ✘ $\alpha + \rho = 0$

Question Number : 110 Question Id : 1298403230 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Fine grains are not desirable for _____

Options :

1. ✘ Fatigue strength

2. ✓ Creep strength
3. ✗ Tensile strength
4. ✗ Impact toughness

Question Number : 111 Question Id : 1298403231 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

To produce nonferrous castings having mechanical properties comparable with forgings, the following method is used

Options :

1. ✗ Slush casting
2. ✓ Squeeze casting
3. ✗ Semi-permanent mold casting
4. ✗ Permanent mold casting

Question Number : 112 Question Id : 1298403232 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Yield point phenomenon observed in annealed low carbon steels is due to presence of

Options :

1. ✘ Silicon
2. ✘ Chromium
3. ✘ Phosphorus
4. ✔ Carbon

Question Number : 113 Question Id : 1298403233 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In a linear arc welding process, the heat input per unit length is inversely proportional to

Options :

1. ✘ Welding current
2. ✘ Welding voltage

3. ✓ Welding speed

4. ✗ Duty cycle of the power source

Question Number : 114 Question Id : 1298403234 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

An annealed plain carbon steel, showing fully pearlitic microstructure, has carbon content of

Options :

1. ✗ 0.01 wt%

2. ✗ 0.20 wt%

3. ✓ 0.77 wt%

4. ✗ 1.20 wt%

Question Number : 115 Question Id : 1298403235 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which metal is extracted by leaching

Options :

1. ✘ Iron
2. ✘ Aluminum
3. ✘ Lead
4. ✔ Gold

Question Number : 116 Question Id : 1298403236 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The Extraction of iron from iron ore is predominantly a

Options :

1. ✔ Chemical process
2. ✘ Combustion process
3. ✘ Heat transfer process
4. ✘ Sintering Process

Question Number : 117 Question Id : 1298403237 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Shot peening improves the fatigue performance of a metallic component by

Options :

1. ✘ Inducing the surface tensile stresses
2. ✘ Increasing the surface ductility
3. ✔ Increasing surface compressive stresses
4. ✘ Increasing the surface hardness

Question Number : 118 Question Id : 1298403238 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Extraction of Zinc from zinc blende is achieved by

Options :

1. ✘ Electrolytic reduction
2. ✔ Roasting followed by reduction with carbon

3. ✘ Roasting followed by reduction with another metal

4. ✘ Roasting followed by self-reduction

Question Number : 119 Question Id : 1298403239 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Turbine blades and valves are produced by

Options :

1. ✘ Centrifugal casting

2. ✔ Investment casting

3. ✘ Die casting

4. ✘ Sand casting

Question Number : 120 Question Id : 1298403240 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The low permeability in sand can cause which of the following defects in casting

Options :

1. ✘ Rough surface

2. ✔ Blow holes

3. ✘ Hot tears

4. ✘ Drop