

# Telangana State Council Higher Education

## Notations :

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

<b>Question Paper Name :</b>	Metallurgical Engineering 13th Aug 2021 Shift 2
<b>Subject Name :</b>	Metallurgical Engineering
<b>Creation Date :</b>	2021-08-13 17:43:11
<b>Duration :</b>	120
<b>Total Marks :</b>	120
<b>Display Marks:</b>	Yes
<b>Calculator :</b>	None
<b>Magnifying Glass Required? :</b>	No
<b>Ruler Required? :</b>	No
<b>Eraser Required? :</b>	No
<b>Scratch Pad Required? :</b>	No
<b>Rough Sketch/Notepad Required? :</b>	No
<b>Protractor Required? :</b>	No
<b>Show Watermark on Console? :</b>	Yes
<b>Highlighter :</b>	No
<b>Auto Save on Console? :</b>	Yes

## Metallurgical Engineering

<b>Group Number :</b>	1
<b>Group Id :</b>	12984027
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	120
<b>Show Attended Group? :</b>	No

<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	120
<b>Is this Group for Examiner? :</b>	No

## Mathematics

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

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

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. ✘  $\infty$
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

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

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  $1700^{\circ}\text{C}$ , 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

- ✘ Remains constant
- ✘ 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 :

- ✘ On anode
- ✘ In electrolyte solution
- ✔ In anode mud
- ✘ 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 :

- ✘ 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



**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. ✘ Recrystalization

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
  - ✘ Are used as a friction lining for clutches and brakes

**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 :**

- ✔ Decrease by a factor of  $\sqrt{2}$
- ✘ Decrease by a factor of 2
- ✘ Decrease by a factor of  $2^2$
- ✘ 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/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





**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

- P- Tempering
- Q- Austempering
- R- Martempering

List – II

- 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 ( $\alpha$ ), transmissivity ( $\tau$ ) and reflectivity ( $\rho$ ) 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