

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 21st Sept 2020 Shift 2
Subject Name :	Metallurgical Engineering
Creation Date :	2020-09-21 17:46:58
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
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 :	88039685
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 :	880396155
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	10
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	880396155
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 88039610081 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If the particular integral of $y''' - y'' = x^2$ is $-\frac{1}{12}f(x)$, then $f(x) =$

Options :

88039640321. ✓ $x^4 + 4x^3 + 12x^2$

88039640322. ✖ $x^4 - 4x^3$

88039640323. ✖ $x^4 + 4x^3$

88039640324. ✖ $x^4 + x^3 - 12x^2$

Question Number : 2 Question Id : 88039610082 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The solution of $y'' + 2y' + y = x$ satisfying $y(0) = y'(0) = 1$ is $y(x) =$

Options :

88039640325. ✔ $x + 3e^{-x}(x+1) - 2$

88039640326. ✖ $x - 3e^{-x}(x+1) + 2$

88039640327. ✖ $x + 3e^{-x}(x+1) + 2$

88039640328. ✖ $x + 3e^{-x}(x+1) - 3$

Question Number : 3 Question Id : 88039610083 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The only positive eigen value of $\begin{pmatrix} 1 & -5 & 8 \\ 1 & -2 & 1 \\ 2 & -1 & -5 \end{pmatrix}$ is

Options :

88039640329. ✖ 3

88039640330. ✖ 2

88039640331. ✔ 1

88039640332. ✖ 4

Question Number : 4 Question Id : 88039610084 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical
Correct Marks : 1 Wrong Marks : 0

$$A = \begin{pmatrix} 1 & -5 & 0 \\ 1 & -1 & 1 \\ 2 & -1 & 0 \end{pmatrix} \Rightarrow A^4 + 5A^2 =$$

Options :

88039640333. ✖ 9A

88039640334. ✔ - 9A

88039640335. ✖ 8A

88039640336. ✖ - 8A

Question Number : 5 Question Id : 88039610085 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The value of 'k' for which the following system has infinitely many solutions is

$$3x - 2y + z = -3, x + 5y + 2z = 4, 4x + 3y + 3z = k$$

Options :

88039640337. ✓ 1

88039640338. ✗ 2

88039640339. ✗ 3

88039640340. ✗ 4

Question Number : 6 Question Id : 88039610086 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Curl of $(x - 2y, \cos xy, z^2 - x)$ is

Options :

88039640341. ✗ $(0, -1, 2 - y \sin xy)$

88039640342. ✓ $(0, 1, 2 - y \sin xy)$

88039640343. ✗ $(0, 1, 2 + y \sin xy)$

88039640344. ✗ $(0, -1, 2 + y \sin xy)$

Question Number : 7 Question Id : 88039610087 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The number of critical points of $f(x, y) = x^4 - 16xy + y^4$ is

Options :

88039640345. ✖ 1

88039640346. ✖ 2

88039640347. ✔ 3

88039640348. ✖ 4

Question Number : 8 Question Id : 88039610088 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

For $k > 1$, the series $1 + \frac{2}{k} + \frac{3}{k^2} + \frac{4}{k^3} + \dots$ converges to

Options :

88039640349. ✔ $\frac{k^2}{(k-1)^2}$

88039640350. ✖ $\frac{(k-1)^2}{k}$

88039640351. ✖ $\frac{(k+1)^2}{k}$

88039640352. ✖ $\frac{k^2}{(k+1)^2}$

Question Number : 9 Question Id : 88039610089 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

From the set $\{1, 2, 3, \dots, 40\}$ two numbers a, b are drawn at random. The probability that a, b are both primes which differ by 2 is

Options :

88039640353. ✖ $\frac{1}{8}$

88039640354. ✔ $\frac{1}{156}$

88039640355. ✖ $\frac{1}{10}$

88039640356. ✖ $\frac{1}{160}$

Question Number : 10 Question Id : 88039610090 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The probability distribution of a random variable X is as follows :

x	1	2	3	4	5	6
$P(X=x)$	$6k$	$5k$	$4k$	$3k$	$2k$	k

Then the mean of the distribution is

Options :

88039640357. ✖ $\frac{4}{3}$

88039640358. ✖ $\frac{5}{3}$

88039640359. ✔ $\frac{7}{3}$

88039640360. ✖ $\frac{8}{3}$

Metallurgical Engineering

Section Id :	880396156
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	110
Number of Questions to be attempted :	110
Section Marks :	110
Display Number Panel :	Yes
Group All Questions :	Yes
Mark As Answered Required? :	Yes
Sub-Section Number :	1
Sub-Section Id :	880396156
Question Shuffling Allowed :	Yes

Question Number : 11 Question Id : 88039610091 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following thermodynamic quantity is a path function?

Options :

88039640361. ✖ Entropy

88039640362. ✖ Volume

88039640363. ✖ Gibbs free energy

88039640364. ✔ Heat

Question Number : 12 Question Id : 88039610092 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Activity coefficient of component B in solution A-B, exhibiting positive deviation from ideal behavior will be

Options :

88039640365. ✓ > 1

88039640366. ✗ 1

88039640367. ✗ < 0

88039640368. ✗ Between 0 and 1

Question Number : 13 Question Id : 88039610093 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

During casting, which section should solidify at last

Options :

88039640369. ✗ Sprue

88039640370. ✗ Casting Gate

88039640371. ✗ Runner

88039640372. ✓ Riser

Question Number : 14 Question Id : 88039610094 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Volumetric thermal expansion coefficient of a material is given by

Options :

88039640373. ✖ $-\frac{1}{V} \left(\frac{dV}{dT} \right)_p$

88039640374. ✖ $-\frac{1}{V} \left(\frac{dV}{dp} \right)_T$

88039640375. ✔ $\frac{1}{V} \left(\frac{dV}{dT} \right)_p$

88039640376. ✖ $\frac{1}{p} \left(\frac{dV}{dT} \right)_p$

Question Number : 15 Question Id : 88039610095 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following can be regarded as an Equation of State?

Options :

88039640377. ✖ $U = f(S, V)$

88039640378. ✔ $P = f(V, T)$

88039640379. ✖ $G = f(p, T)$

88039640380. ✖ $H = f(S, p)$

Question Number : 16 Question Id : 88039610096 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Maximum number of phases that can co-exist in a ternary system at constant pressure and temperature is

Options :

88039640381. ✖ 2

88039640382. ✖ 5

88039640383. ✖ 4

88039640384. ✔ 3

Question Number : 17 Question Id : 88039610097 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

According to parabolic rate law, thickness of the oxide layer (x) growing on a metal surface will have the following dependence on time (t)

Options :

88039640385. ✖ $x \propto t$

88039640386. ✖ $x \propto t^2$

88039640387. ✔ $x \propto t^{0.5}$

88039640388. ✖ $x \propto \frac{1}{t}$

Question Number : 18 Question Id : 88039610098 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The dimension of diffusion coefficient is given by

Options :

88039640389. ✓ L^2T^{-1}

88039640390. ✗ LT^{-1}

88039640391. ✗ MLT^{-2}

88039640392. ✗ $ML^{-2}T$

Question Number : 19 Question Id : 88039610099 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The potential of a galvanic cell of copper (potential of +0.34 V) and aluminium (potential of -1.66 V) is

Options :

88039640393. ✗ -1.32 V

88039640394. ✗ 1.32 V

88039640395. ✗ 0.0 V

88039640396. ✓ 2.0 V

Question Number : 20 Question Id : 88039610100 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

SI unit of kinematic viscosity is

Options :

88039640397. ✓ $\text{m}^2 \text{s}^{-1}$

88039640398. ✗ m s^{-1}

88039640399. ✗ m s^2

88039640400. ✗ m s

Question Number : 21 Question Id : 88039610101 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following metals is electrochemically most active?

Options :

88039640401. ✗ Aluminum

88039640402. ✗ Iron

88039640403. ✓ Magnesium

88039640404. ✗ Titanium

Question Number : 22 Question Id : 88039610102 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In electrochemical corrosion, _____ reactions take place at cathode.

Options :

88039640405. ✖ Oxidation

88039640406. ✔ Reduction

88039640407. ✖ Both oxidation and reduction

88039640408. ✖ Neither oxidation nor reduction

Question Number : 23 Question Id : 88039610103 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The brazing process is carried in the temperature range of

Options :

88039640409. ✖ 150 - 250°C

88039640410. ✖ 250 - 450°C

88039640411. ✖ 500- 700°C

88039640412. ✔ 700- 900°C

Question Number : 24 Question Id : 88039610104 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following can provide cathodic protection to iron?

Options :

88039640413. ✗ Copper

88039640414. ✓ Zinc

88039640415. ✗ Nickel

88039640416. ✗ Chromium

Question Number : 25 Question Id : 88039610105 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Corrosion resistance of steel is increased by adding

Options :

88039640417. ✗ Nickel and molybdenum

88039640418. ✓ Chromium and nickel

88039640419. ✗ Aluminum and zinc

88039640420. ✗ Aluminum and boron

Question Number : 26 Question Id : 88039610106 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In austenitic stainless steels, sensitization leads to

Options :

88039640421. ✓ Intergranular corrosion

88039640422. ✗ Transgranular corrosion

88039640423. ✗ Pitting corrosion

88039640424. ✗ Crevice corrosion

Question Number : 27 Question Id : 88039610107 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The hot metal charged into a basic oxygen furnace typically contains _____ wt.% of carbon.

Options :

88039640425. ✗ Less than 1.5

88039640426. ✗ 1.5 to 2.5

88039640427. ✓ 3.5 to 4.5

88039640428. ✗ 5.5 to 6.5

Question Number : 28 Question Id : 88039610108 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Blast furnace-Basic oxygen furnace (BF-BOF) steelmaking, the main source of sulfur is

Options :

88039640429. ✘ Iron ore

88039640430. ✘ Sinter

88039640431. ✔ Coke

88039640432. ✘ Steel scrap

Question Number : 29 Question Id : 88039610109 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Steelmaking is

Options :

88039640433. ✔ An oxidation process

88039640434. ✘ A reduction process

88039640435. ✘ A calcination process

88039640436. ✘ A roasting process

Question Number : 30 Question Id : 88039610110 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

----- is added to prevent harmful FeS formation in steels.

Options :

88039640437. ✘ Aluminum

88039640438. ✔ Manganese

88039640439. ✘ Nickel

88039640440. ✘ Copper

Question Number : 31 Question Id : 88039610111 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In steelmaking, effective desulfurization of hot metal requires that the slag is

Options :

88039640441. ✔ Reducing and basic

88039640442. ✘ Oxidizing and basic

88039640443. ✘ Reducing and acidic

88039640444. ✘ Reducing and neutral

Question Number : 32 Question Id : 88039610112 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Matte smelting is used in the extraction of

Options :

88039640445. ✖ Nickel

88039640446. ✖ Aluminum

88039640447. ✔ Copper

88039640448. ✖ Magnesium

Question Number : 33 Question Id : 88039610113 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In Kroll's process, TiCl_4 is reduced to titanium metal using

Options :

88039640449. ✖ Sodium

88039640450. ✔ Magnesium

88039640451. ✖ Cerium

88039640452. ✖ Zirconium

Question Number : 34 Question Id : 88039610114 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In Hall-Heroult's process, alumina is dissolved in

Options :

88039640453. ✘ Molten chromite

88039640454. ✘ Molten cuprite

88039640455. ✔ Molten cryolite

88039640456. ✘ Molten rutile

Question Number : 35 Question Id : 88039610115 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Hardness of martensite in steels increases with

Options :

88039640457. ✔ Increase in carbon content

88039640458. ✘ Increase in cooling rate

88039640459. ✘ Increase in martensite-start (m_s) temperature

88039640460. ✘ Decrease in austenitization temperature

Question Number : 36 Question Id : 88039610116 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Critical value of the Gibbs energy of nucleation at equilibrium temperature is

Options :

88039640461. ✘ Zero

88039640462. ✔ Infinite

88039640463. ✘ Positive

88039640464. ✘ Negative

Question Number : 37 Question Id : 88039610117 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In which of the following does most unsteady heat flow occurs

Options :

88039640465. ✘ Walls of refrigerator

88039640466. ✔ Annealing of castings

88039640467. ✘ Walls of furnace

88039640468. ✘ Through lagged pipes carrying steam

Question Number : 38 Question Id : 88039610118 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Annealing produces a microstructure consisting of pearlite + proeutectoid cementite in _____ steels.

Options :

88039640469. ✖ Hypoeutectoid

88039640470. ✔ Hypereutectoid

88039640471. ✖ Eutectoid

88039640472. ✖ Interstitial-free

Question Number : 39 Question Id : 88039610119 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following binary systems is isomorphous?

Options :

88039640473. ✖ Fe-Cu

88039640474. ✔ Cu-Ni

88039640475. ✖ Al-Cu

88039640476. ✖ Ni-Ti

Question Number : 40 Question Id : 88039610120 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Lever rule is used for

Options :

88039640477. ✓ Determining the amounts of phases that exist in equilibrium at a given temperature

88039640478. ✗ Determining the compositions of phases that exist in equilibrium at a given temperature

88039640479. ✗ Determining the temperature at which a given phase transformation can occur

88039640480. ✗ Determining the critical cooling rate for a given phase transformation can take place

Question Number : 41 Question Id : 88039610121 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true as per Hume-Rothery rules?

Options :

88039640481. ✗ Metals with a large difference in atomic size exhibit extended solid solubility

88039640482. ✗ Metals with widely different electronegativities exhibit extended solid solubility

88039640483. ✗ A metal is more likely to dissolve a solute of lower valency than a solute of higher valency

A metal is more likely to dissolve a solute of higher valency than a solute of lower valency

88039640484. ✓

Question Number : 42 Question Id : 88039610122 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In naturally aged Al-Cu alloys, strengthening is due to

Options :

88039640485. ✓ Guinier – Preston zones

88039640486. ✗ Semi-coherent Al_2Cu (θ) precipitates

88039640487. ✗ Coherent Al_2Cu (θ) precipitates

88039640488. ✗ Incoherent Al_2Cu (θ) particles

Question Number : 43 Question Id : 88039610123 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In titanium alloys, _____ is an alpha stabilizer.

Options :

88039640489. ✓ Aluminum

88039640490. ✗ Vanadium

88039640491. ✗ Niobium

88039640492. ✖ Molybdenum

Question Number : 44 Question Id : 88039610124 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is not a precipitation-hardenable aluminum alloy?

Options :

88039640493. ✖ Al-Cu

88039640494. ✖ Al-Zn-Mg

88039640495. ✔ Al-Mn

88039640496. ✖ Al-Mg-Si

Question Number : 45 Question Id : 88039610125 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What is the major alloying element in phosphor bronze?

Options :

88039640497. ✖ Zinc

88039640498. ✔ Tin

88039640499. ✖ Phosphorus

88039640500. ✖ Aluminum

Question Number : 46 Question Id : 88039610126 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ alloys are precipitation hardenable.

Options :

88039640501. ✔ Cu-Be

88039640502. ✖ Cu-Zn

88039640503. ✖ Cu-Sn

88039640504. ✖ Cu-Al

Question Number : 47 Question Id : 88039610127 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is not a gamma stabilizer in iron.

Options :

88039640505. ✖ Carbon

88039640506. ✖ Nitrogen

88039640507. ✔ Chromium

88039640508. ✖ Nickel

Question Number : 48 Question Id : 88039610128 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What is the main alloying element in transformer steels?

Options :

88039640509. ✖ Manganese

88039640510. ✔ Silicon

88039640511. ✖ Chromium

88039640512. ✖ Nickel

Question Number : 49 Question Id : 88039610129 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

In regenerator type heat exchanger, heat transfer takes place by

Options :

88039640513. ✖ Direct mixing of hot and cold fluids

88039640514. ✖ Complete separation between hot and cold fluids

88039640515. ✔ Flow of hot and cold fluids alternately over a surface

88039640516. ✖ Generation of heat again and again

Question Number : 50 Question Id : 88039610130 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is most machinable?

Options :

88039640517. ✓ Gray cast iron

88039640518. ✗ Nodular cast iron

88039640519. ✗ White cast iron

88039640520. ✗ Malleable cast iron

Question Number : 51 Question Id : 88039610131 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is used in the production of ductile iron for nodularizing the graphite.

Options :

88039640521. ✗ Sodium

88039640522. ✗ Aluminum

88039640523. ✓ Magnesium

88039640524. ✗ Manganese

Question Number : 52 Question Id : 88039610132 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Micro-segregation of alloying elements during solidification can be minimized by

Options :

- 88039640525. ✘ Reducing the cooling rate during solidification
- 88039640526. ✔ Increasing the cooling rate during solidification
- 88039640527. ✘ Addition of inoculants to the melt
- 88039640528. ✘ Vigorous stirring of the melt before casting

Question Number : 53 Question Id : 88039610133 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The property of a material that cannot be significantly changed by heat treatment

Options :

- 88039640529. ✘ Yield Strength
- 88039640530. ✘ Ultimate tensile strength
- 88039640531. ✘ Ductility
- 88039640532. ✔ Elastic modulus

Question Number : 54 Question Id : 88039610134 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What is the preferred crystallographic direction for dendritic growth in face-centered cubic metals?

Options :

88039640533. ✓ $\langle 100 \rangle$

88039640534. ✗ $\langle 111 \rangle$

88039640535. ✗ $\langle 110 \rangle$

88039640536. ✗ $\langle 1010 \rangle$

Question Number : 55 Question Id : 88039610135 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is a planar defect?

Options :

88039640537. ✗ Vacancy

88039640538. ✗ Dislocation

88039640539. ✓ Stacking fault

88039640540. ✗ Substitutional impurity atom

Question Number : 56 Question Id : 88039610136 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is true?

Options :

88039640541. ✓ The equilibrium vacancy concentration in metals increases with increase in temperature

88039640542. ✗ The equilibrium vacancy concentration in metals decreases with increase in temperature

88039640543. ✗ The equilibrium vacancy concentration in metals does not change with temperature

88039640544. ✗ There is no such thing as equilibrium vacancy concentration in metals

Question Number : 57 Question Id : 88039610137 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ is not a substitutional solute in iron.

Options :

88039640545. ✗ Silicon

88039640546. ✗ Manganese

88039640547. ✗ Nickel

88039640548. ✓ Carbon

Question Number : 58 Question Id : 88039610138 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The fastest diffusing species in Fe is

Options :

88039640549. ✓ Hydrogen

88039640550. ✗ Nickel

88039640551. ✗ Carbon

88039640552. ✗ Tungsten

Question Number : 59 Question Id : 88039610139 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Microstructure of maraging steels consists of

Options :

88039640553. ✗ Bainite and Ferrite

88039640554. ✗ Bainite and Pearlite

88039640555. ✓ Lath Martensite

88039640556. ✗ Plate Martensite

Question Number : 60 Question Id : 88039610140 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Microstructure of upper Bainite is characterized by

Options :

- 88039640557. ✓ Presence of carbides only at the ferrite lath boundaries
- 88039640558. ✗ Presence of carbides only within the ferrite laths
- 88039640559. ✗ Presence of carbides both within and at the boundaries of ferrite laths
- 88039640560. ✗ Absence of carbides

Question Number : 61 Question Id : 88039610141 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

All the three modes of heat transmission are involved in

Options :

- 88039640561. ✗ Melting of ice
- 88039640562. ✗ Cooling of small metal casting in a quenching bath
- 88039640563. ✗ Heat flow through the walls of a refrigerator
- 88039640564. ✓ Automobile engine equipped with a thermo-siphon cooling system

Question Number : 62 Question Id : 88039610142 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

During overaging of steels, hardness

Options :

88039640565. ✓ Decreases

88039640566. ✗ Increases

88039640567. ✗ Is constant

88039640568. ✗ Increases abruptly

Question Number : 63 Question Id : 88039610143 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When using back-scattered electrons for imaging in scanning electron microscopy, the phases containing higher amounts of high atomic number elements appear

Options :

88039640569. ✗ Darker

88039640570. ✓ Brighter

88039640571. ✗ Reddish

88039640572. ✗ Greenish

Question Number : 64 Question Id : 88039610144 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following techniques can be used for identifying the phases present in a material?

Options :

88039640573. ✓ X-ray diffraction

88039640574. ✗ Scanning electron microscopy

88039640575. ✗ Differential scanning calorimetry

88039640576. ✗ Thermogravimetric analysis

Question Number : 65 Question Id : 88039610145 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Antioch process is a

Options :

88039640577. ✓ Process of making porous moulds

88039640578. ✗ Continuous casting process

88039640579. ✗ Brazing process

88039640580. ✗ Welding process

Question Number : 66 Question Id : 88039610146 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Inclusion rating of steels is best carried out

Options :

88039640581. ✖ After Nital etch

88039640582. ✖ After Picral etch

88039640583. ✖ After Keller's etch

88039640584. ✔ In as-polished condition

Question Number : 67 Question Id : 88039610147 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Surface of steel cannot be hardened by

Options :

88039640585. ✖ Carburizing

88039640586. ✖ Nitriding

88039640587. ✖ Flame hardening

88039640588. ✔ Phosphating

Question Number : 68 Question Id : 88039610148 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is commonly used for positive material identification in industry.

Options :

88039640589. ✓ X-ray fluorescence

88039640590. ✗ Energy dispersive spectroscopy

88039640591. ✗ Wavelength dispersive spectroscopy

88039640592. ✗ Fourier-transform infrared spectroscopy

Question Number : 69 Question Id : 88039610149 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The principle of heating in induction furnace is

Options :

88039640593. ✗ High resistance elements

88039640594. ✓ Eddy Currents

88039640595. ✗ Direct fuel burning

88039640596. ✗ Heating with spark

Question Number : 70 Question Id : 88039610150 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Water pipes of large length and diameter are made by

Options :

- 88039640597. ✘ Semi-centrifugal casting
- 88039640598. ✔ Continuous casting
- 88039640599. ✘ Sand casting
- 88039640600. ✘ Electric resistance welding

Question Number : 71 Question Id : 88039610151 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ can be used for texture analysis of a metallic sample.

Options :

- 88039640601. ✘ Optical microscopy
- 88039640602. ✘ Scanning electron microscopy
- 88039640603. ✘ Transmission electron microscopy
- 88039640604. ✔ Electron back-scattered diffraction

Question Number : 72 Question Id : 88039610152 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

ASTM grain size number (n) is related to the number of grains (N) that one can count at 100X magnification by

Options :

88039640605. ✓ $N = 2^{(n-1)}$

88039640606. ✗ $N = 2^{(n+1)}$

88039640607. ✗ $N = 100^{(n-1)}$

88039640608. ✗ $N = 100^{(n+1)}$

Question Number : 73 Question Id : 88039610153 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ polymers do not soften upon heating.

Options :

88039640609. ✗ Thermoplastic

88039640610. ✓ Thermosetting

88039640611. ✗ Crystalline

88039640612. ✗ Elastomeric

Question Number : 74 Question Id : 88039610154 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is used as a thermal barrier coating on aeroengine components.

Options :

88039640613. ✘ Alumina

88039640614. ✔ Zirconia

88039640615. ✘ Magnesita

88039640616. ✘ Silica

Question Number : 75 Question Id : 88039610155 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ can simultaneously increase the strength and ductility of a metallic material.

Options :

88039640617. ✘ Precipitation hardening

88039640618. ✘ Dispersion hardening

88039640619. ✔ Grain refinement

88039640620. ✘ Work hardening

Question Number : 76 Question Id : 88039610156 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

During secondary creep, the creep rate

Options :

88039640621. ✖ Increases with time

88039640622. ✖ Decreases with time

88039640623. ✖ May increase or decrease with time depending on the type of material

88039640624. ✔ Doesn't change with time

Question Number : 77 Question Id : 88039610157 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ is very sensitive to the surface roughness of test specimens.

Options :

88039640625. ✖ Tensile strength

88039640626. ✖ Impact strength

88039640627. ✖ Creep strength

88039640628. ✔ Fatigue strength

Question Number : 78 Question Id : 88039610158 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Fractographic examination of a brittle fractured metallic material is expected to show

Options :

- 88039640629. ✘ Dimpled rupture features
- 88039640630. ✘ Grain facets and intergranular fracture features
- 88039640631. ✔ River patterns and chevron marks
- 88039640632. ✘ Beach marks and striations

Question Number : 79 Question Id : 88039610159 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Why glass fibers exhibit increasing strength with decreasing diameter?

Options :

- 88039640633. ✔ Defects and imperfections in glass fibers get smaller and fewer as the fiber diameter is reduced
- 88039640634. ✘ Glass fibers work harden as the fiber diameter is reduced
- 88039640635. ✘ Glass fibers develop a fine grain size as the fiber diameter is reduced
- 88039640636. ✘ Glass fibers develop a more homogeneous composition as the fiber diameter is reduced

Question Number : 80 Question Id : 88039610160 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

According to Griffith's theory of brittle fracture, the fracture strength of a material is

Options :

- 88039640637. ✘ Inversely proportional to the bond energy
- 88039640638. ✘ Inversely proportional to the grain size
- 88039640639. ✘ Inversely proportional to the crack length
- 88039640640. ✔ Inversely proportional to the square root of the crack length

Question Number : 81 Question Id : 88039610161 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

According to Hall-Petch equation, the yield strength of a material is

Options :

- 88039640641. ✘ Directly proportional to the grain size
- 88039640642. ✘ Directly proportional to the square root of the grain size
- 88039640643. ✘ Inversely proportional to the grain size
- 88039640644. ✔ Inversely proportional to the square root of the grain size

Question Number : 82 Question Id : 88039610162 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Young's modulus of aluminum is

Options :

88039640645. ✖ 69 Pa

88039640646. ✖ 69 MPa

88039640647. ✔ 69 GPa

88039640648. ✖ 69 MPa√m

Question Number : 83 Question Id : 88039610163 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Fracture toughness is a measure of

Options :

88039640649. ✖ Resistance to plastic deformation

88039640650. ✖ Resistance to strain hardening

88039640651. ✖ Resistance to crack initiation

88039640652. ✔ Resistance to crack propagation

Question Number : 84 Question Id : 88039610164 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Cross slip can occur more easily in materials with

Options :

88039640653. ✓ High stacking fault energy

88039640654. ✗ Low stacking fault energy

88039640655. ✗ High grain boundary energy

88039640656. ✗ Low grain boundary energy

Question Number : 85 Question Id : 88039610165 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Nabarro-Herring creep dominates at

Options :

88039640657. ✗ Low temperatures and low stresses

88039640658. ✗ High temperatures and high stresses

88039640659. ✗ Low temperatures and high stresses

88039640660. ✓ High temperatures and low stresses

Question Number : 86 Question Id : 88039610166 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is

Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

As per ASTM E8/E8M standard, the gauge length of a tensile specimen should be _____ times the gauge diameter.

Options :

88039640661. ✘ Two

88039640662. ✔ Four

88039640663. ✘ Six

88039640664. ✘ Eight

Question Number : 87 Question Id : 88039610167 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For materials which do not exhibit a fatigue limit, the fatigue strength is defined at _____ stress cycles.

Options :

88039640665. ✘ 10^2

88039640666. ✘ 10^4

88039640667. ✔ 10^6

88039640668. ✘ 10^8

Question Number : 88 Question Id : 88039610168 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following is most detrimental for fatigue life?

Options :

88039640669. ✓ High mean stress and high stress range

88039640670. ✗ High mean stress and low stress range

88039640671. ✗ Low mean stress and low stress range

88039640672. ✗ Low mean stress and high stress range

Question Number : 89 Question Id : 88039610169 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following hardness testing methods uses a ball indenter?

Options :

88039640673. ✗ Brinell and Vickers

88039640674. ✗ Vickers and Rockwell B

88039640675. ✗ Vickers and Knoop

88039640676. ✓ Brinell and Rockwell B

Question Number : 90 Question Id : 88039610170 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Lamellar tearing in steel welds is caused by

Options :

- 88039640677. ✓ Excessive sulfide and silicate inclusions in the steel base plates
- 88039640678. ✗ Excessive oxide and alumina inclusions in the steel base plates
- 88039640679. ✗ Very coarse grains in the steel base plates
- 88039640680. ✗ Very fine grains in the steel base plates

Question Number : 91 Question Id : 88039610171 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not true?

Options :

- 88039640681. ✓ Submerged arc welding can be carried out in all positions.
- 88039640682. ✗ Submerged arc welding is well-suited for welding of thick steel plates
- 88039640683. ✗ Submerged arc welding can achieve very high weld metal deposition rates
- 88039640684. ✗ Submerged arc welding can't be carried out in manual mode

Question Number : 92 Question Id : 88039610172 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Alternating current is commonly used for gas-tungsten arc welding of

Options :

88039640685. ✖ Steels

88039640686. ✖ Stainless steels

88039640687. ✔ Aluminum alloys

88039640688. ✖ Titanium alloys

Question Number : 93 Question Id : 88039610173 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Bimetal engine valves are commonly produced using

Options :

88039640689. ✔ Rotary friction welding

88039640690. ✖ Friction stir welding

88039640691. ✖ Explosive welding

88039640692. ✖ Ultrasonic welding

Question Number : 94 Question Id : 88039610174 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Resistance spot welding electrodes are made of

Options :

88039640693. ✖ Tungsten

88039640694. ✖ Steel

88039640695. ✔ Copper

88039640696. ✖ Aluminum

Question Number : 95 Question Id : 88039610175 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ is recommended for enhancing the weld metal deposition rate in shield metal arc welding.

Options :

88039640697. ✔ Direct current electrode positive (DCEP) polarity

88039640698. ✖ Direct current electrode negative (DCEN) polarity

88039640699. ✖ Alternating current

88039640700. ✖ Pulsed current

Question Number : 96 Question Id : 88039610176 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In sheet metal forming, the problem of springback increases with

Options :

- 88039640701. ✗ Increase in tensile ductility of the sheet material
- 88039640702. ✓ Increase in yield strength of the sheet material
- 88039640703. ✗ Increase in elastic modulus of the sheet material
- 88039640704. ✗ Increase in thickness of the sheet material

Question Number : 97 Question Id : 88039610177 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

_____ is a tensile forming process.

Options :

- 88039640705. ✗ Rolling
- 88039640706. ✗ Forging
- 88039640707. ✗ Extrusion
- 88039640708. ✓ Stretching

Question Number : 98 Question Id : 88039610178 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Which of the following is not a severe plastic deformation process?

Options :

88039640709. ✘ Friction stir process
88039640710. ✘ Equi-channel angular extrusion
88039640711. ✘ Accumulated roll bonding
88039640712. ✔ Pilgering

Question Number : 99 Question Id : 88039610179 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Materials with _____ tend to exhibit superplasticity.

Options :

88039640713. ✘ Fine grain size and low strain-rate sensitivity
88039640714. ✔ Fine grain size and high strain-rate sensitivity
88039640715. ✘ Coarse grain size and high strain-rate sensitivity
88039640716. ✘ Coarse grain size and low strain-rate sensitivity

Question Number : 100 Question Id : 88039610180 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Friction between the container and the billet is the highest in

Options :

88039640717. ✓ Direct extrusion

88039640718. ✗ Indirect extrusion

88039640719. ✗ Hydrostatic extrusion

88039640720. ✗ Impact extrusion

Question Number : 101 Question Id : 88039610181 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Stainless steel tumblers for household use are produced by

Options :

88039640721. ✗ Warm forging

88039640722. ✓ Deep drawing

88039640723. ✗ Stamping

88039640724. ✗ Extrusion

Question Number : 102 Question Id : 88039610182 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

If a piece of metal is removed from a larger piece of sheet metal and the removed piece of metal is your product, then the process is termed

Options :

88039640725. ✓ Blanking

88039640726. ✗ Punching

88039640727. ✗ Piercing

88039640728. ✗ Drilling

Question Number : 103 Question Id : 88039610183 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

What is the driving force for sintering of metal powders?

Options :

88039640729. ✓ Decrease in surface energy

88039640730. ✗ Increase in surface energy

88039640731. ✗ Increase in free energy

88039640732. ✗ Decrease in entropy

Question Number : 104 Question Id : 88039610184 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Cermets are produced by

Options :

88039640733. ✘ Rapid solidification process

88039640734. ✔ Powder metallurgical process

88039640735. ✘ Thermo-mechanical process

88039640736. ✘ Friction stir process

Question Number : 105 Question Id : 88039610185 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following metals is best suited for die casting?

Options :

88039640737. ✘ Cobalt

88039640738. ✘ Nickel

88039640739. ✘ Titanium

88039640740. ✔ Aluminum

Question Number : 106 Question Id : 88039610186 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Automotive cylinder liners are commonly produced using

Options :

88039640741. ✘ Sand casting

88039640742. ✘ Investment casting

88039640743. ✔ Centrifugal casting

88039640744. ✘ Die casting

Question Number : 107 Question Id : 88039610187 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Aeroengine turbine blades are produced by

Options :

88039640745. ✔ Vacuum investment casting

88039640746. ✘ High pressure die casting

88039640747. ✘ Low pressure die casting

88039640748. ✘ Semi-solid casting

Question Number : 108 Question Id : 88039610188 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

The principle that impure elements are more soluble in liquid metal than in solid metal is used in

Options :

88039640749. ✓ Zone refining

88039640750. ✗ Vacuum refining

88039640751. ✗ Vapour phase refining

88039640752. ✗ Electrolytic refining

Question Number : 109 Question Id : 88039610189 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Cork is a good insulator because it has

Options :

88039640753. ✗ Free electrons

88039640754. ✗ Atoms colliding frequency

88039640755. ✗ Low density

88039640756. ✓ Porous body

Question Number : 110 Question Id : 88039610190 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Which of the following nondestructive testing method is not suitable for examining titanium alloys?

Options :

88039640757. ✖ Liquid penetrant testing

88039640758. ✔ Magnetic particle inspection

88039640759. ✖ Ultrasonic testing

88039640760. ✖ Radiographic testing

Question Number : 111 Question Id : 88039610191 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ can only be used for inspecting electrically conductive materials.

Options :

88039640761. ✖ Liquid penetrant testing

88039640762. ✔ Eddy current testing

88039640763. ✖ Ultrasonic testing

88039640764. ✖ Radiographic testing

Question Number : 112 Question Id : 88039610192 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Magnetic particle inspection can reveal

Options :

88039640765. ✖ Only surface defects

88039640766. ✔ Both surface and near-surface defects

88039640767. ✖ Surface as well as internal defects

88039640768. ✖ Only internal defects

Question Number : 113 Question Id : 88039610193 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Coarse grain size can affect the sensitivity of

Options :

88039640769. ✖ Liquid penetrant testing

88039640770. ✖ Magnetic particle inspection

88039640771. ✔ Ultrasonic testing

88039640772. ✖ Radiographic testing

Question Number : 114 Question Id : 88039610194 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Domestic cooking vessels are commonly made of

Options :

88039640773. ✓ Austenitic stainless steels

88039640774. ✗ Ferritic stainless steels

88039640775. ✗ Duplex stainless steels

88039640776. ✗ Martensitic stainless steels

Question Number : 115 Question Id : 88039610195 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Industrial knives are commonly produced using

Options :

88039640777. ✗ Austenitic stainless steels

88039640778. ✗ Duplex stainless steels

88039640779. ✓ Martensitic stainless steels

88039640780. ✗ Ferritic stainless steels

Question Number : 116 Question Id : 88039610196 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ are commonly used in automotive exhaust systems.

Options :

88039640781. ✓ Ferritic stainless steels

88039640782. ✗ Austenitic stainless steels

88039640783. ✗ Martensitic stainless steels

88039640784. ✗ Duplex stainless steels

Question Number : 117 Question Id : 88039610197 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ stainless steels are suitable for use at sub-zero temperatures.

Options :

88039640785. ✗ Martensitic stainless steels

88039640786. ✓ Austenitic stainless steels

88039640787. ✗ Ferritic stainless steels

88039640788. ✗ Duplex stainless steels

Question Number : 118 Question Id : 88039610198 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Beverage cans are commonly made of

Options :

88039640789. ✖ Al-Si alloys

88039640790. ✔ Al-Mg alloys

88039640791. ✖ Al-Zn-Cu alloys

88039640792. ✖ Al-Cu alloys

Question Number : 119 Question Id : 88039610199 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

_____ are widely used in biomedical applications.

Options :

88039640793. ✖ Nickel alloys

88039640794. ✖ Copper alloys

88039640795. ✖ Aluminum alloys

88039640796. ✔ Titanium alloys

Question Number : 120 Question Id : 88039610200 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Is Question Mandatory : No Single Line Question Option : No Option Orientation : Vertical Correct Marks : 1 Wrong Marks : 0

Shape memory alloys exhibit

Options :

88039640797. ✓ Reversible martensitic transformation

88039640798. ✗ Reversible eutectoid transformation

88039640799. ✗ Reversible eutectic transformation

88039640800. ✗ Reversible peritectic transformation