Andhra Pradesh State Council of 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 :	Metallurgy 20th July 2022 Shift 1
Duration :	120
Total Marks :	120
Display Marks:	No
Share Answer Key With Delivery Engine :	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
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No

Metallurgy

Section Id :	90030018
Section Number :	1
Mandatory or Optional :	Mandatory
Number of Questions :	120
Section Marks :	120
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0

Question Number : 1 Question Id : 9003002041 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

..... are example of extensive properties.

Options :

1. ✔ mass and volume

2. ✘ volume and pressure

3. ✘ pressure and mass

4. ✘ density and pressure

Question Number : 2 Question Id : 9003002042 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Law of conservation of energy of a system is also known as .....

Options :

1. ✗ Zeroth law of thermodynamics

2. ✓ First law of thermodynamics

3. ✗ Second law of thermodynamics

4. ✗ Dulong and Petit's law

Question Number : 3 Question Id : 9003002043 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What are the three primary gas laws?

Options :

1. ✓ Charles' law, Boyle's law and Avogadro's law

2. ✗ Charles' law, Boyle's law and Dulong and Petit's law

3. ✗ Charles' law, Boyle's law and Joule's law

4. ✗ Charles' law, Boyle's law and Regnault's law

Question Number : 4 Question Id : 9003002044 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following quantities is not a property of a system?

Options :

1. ✖ pressure

2. ✖ temperature

3. ✔ heat

4. ✖ specific volume

Question Number : 5 Question Id : 9003002045 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following items is not a path function?

Options :

1. ✔ thermal conductivity

2. ✖ heat

3. ✖ work

4. ✖ kinetic energy

Question Number : 6 Question Id : 9003002046 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An open system is one in which .....

Options :

1. ✖ mass does not cross the boundaries of the system, though energy may do so

2. ✗ mass crosses the boundary, but not energy

3. ✗ neither mass nor energy crosses the boundary of the system

4. ✓ both mass and energy cross the boundary of the system

Question Number : 7 Question Id : 9003002047 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The condition of perfect vacuum i.e., absolute zero pressure can be obtained at

Options :

1. ✗ a temperature of 0°C

2. ✓ a temperature of -273.16°C

3. ✗ a temperature of -273°K

4. ✗ under vacuum conditions

Question Number : 8 Question Id : 9003002048 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

An isothermal process is thermodynamic process in which …….. of a system remains constant.

Options :

1. ✗ mass

2. ✓ temperature

3. ✗ volume

4. ✗ density

Question Number : 9 Question Id : 9003002049 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The sequence of four stages in Carnot's cycle are ……..

Options :

1. ✗ Adiabatic expansion - Isothermal expansion - Adiabatic compression – Isothermal compression

2. ✗ Adiabatic compression - Adiabatic expansion - Isothermal expansion - Isothermal compression

3. ✓ Isothermal expansion – Adiabatic expansion -Isothermal compression -Adiabatic compression

4. ✗ Isothermal compression - Isothermal expansion – Adiabatic expansion -Adiabatic compression

Question Number : 10 Question Id : 9003002050 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is the correct Gibbs equation?

Options :

1. ✗ $\Delta G = \Delta H + T\Delta S$

2. ✓ $\Delta G = \Delta H - T\Delta S$

3. ✗ $\Delta G = \Delta H - 2T\Delta S$

4. ✗ $\Delta G = \Delta H - 3T\Delta S$

Question Number : 11 Question Id : 9003002051 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ellingham diagram is a plot between ……for the formation of oxides of metals.

Options :

1. ✗ composition and temperature

2. ✗ stress and strain

3. ✗ composition and pressure

4. ✓ $\Delta_f G^o$ and T

Question Number : 12 Question Id : 9003002052 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following statement is incorrect according to heat transfer?

Options :

1. ✓ Heat flow doesn't depend on temperature

2. ✗ A material medium is not necessary for heat transmission

3. ✗ The process of heat transfer is an irreversible process

4. ✗ For heat exchange, a temperature gradient must exist

Question Number : 13 Question Id : 9003002053 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is the rate of heat transfer unit?

Options :

1. ✓ Watt

2. ✗ Pascal

3. ✗ Joule

4. ✗ Newton

Question Number : 14 Question Id : 9003002054 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For conduction heat transfer, the heat energy propagation will be minimal for _____

Options :

1. ✗ Copper

2. ✓ Air

3. ✗ Water

4. ✗ Lead

Question Number : 15 Question Id : 9003002055 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

The appropriate rate equation for convective heat transfer between a surface and adjacent fluid is prescribed by which law?

Options :

1. ✗ Wein's displacement law

2. ✗ Kirchhoff's law

3. ✓ Newton's law of cooling

4. ✗ Newton's first law

Question Number : 16 Question Id : 9003002056 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Mark the system where heat transfer is given by forced convection

Options :

1. ✗ Heat flow from hot pavement to the surrounding atmosphere

2. ✗ Heat exchange on the outside of cold and warm pipes

3. ✗ Chilling effect of cold wind on a warm body

4. ✓ Fluid passing through the tubes of a condenser and other heat exchange equipment

Question Number : 17 Question Id : 9003002057 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Energy released by a radiating surface is not continuous but is in the form of successive and separate packets of energy called

Options :

1. ✓ Photons

2. ✗ Protons

3. ✗ Electrons

4. ✗ Neutrons

Question Number : 18 Question Id : 9003002058 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which Law states movement of solute from higher concentration to lower concentration across a concentration gradient?

Options :

1. ✓ Fick's First Law

2. ✗ Fick's Second Law

3. ✗ Both 1 and 2

4. ✗ Fick's Third Law

Question Number : 19 Question Id : 9003002059 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which of the following conditions can the Bernoulli equation not be used?

Options :

1. ✓ Viscous flow

2. ✗ incompressible fluid

3. ✗ steady flow

4. ✗ laminar flow

Question Number : 20 Question Id : 9003002060 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The dimension of diffusion coefficient is given by

Options :

1. ✗ $M L T^{-2}$

2. ✓ $L^{2} T^{-1}$

3. ✗ $L T^{-1}$

4. ✗ $M L^{-2} T$

Question Number : 21 Question Id : 9003002061 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a unit of dynamic viscosity?

Options :

1. ✗ $[M^1 L^1 T^{-1}]$

2. ✗ $[M^1 L^{-2} T^{-2}]$

3. ✓ $[M^1 L^{-1} T^{-1}]$

4. ✗ $[M^1 L^2 T^{-2}]$

Question Number : 22 Question Id : 9003002062 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ratio of the limiting force of friction (F) to the normal reaction (R) is known as

Options :

1. ✓ Coefficient of friction

2. ✗ Force of friction

3. ✗ Angle of friction

4. ✗ Both force and angle of friction

Question Number : 23 Question Id : 9003002063 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Froth flotation process is based on

Options :

1. ✗ specific gravity of the particles

2. ✗ magnetic properties of the particles

3. ✗ electrical properties of the particles

4. ✓ wetting properties of the particles

Question Number : 24 Question Id : 9003002064 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The important laws of comminution are

Options :

1. ✓ Kicks, Rittinger and Bonds law

2. ✗ Newtons law

3. ✗ Gy's law

4. ✗ Stokes law

Question Number : 25 Question Id : 9003002065 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In India, the largest reserve of bauxite ore is found in

Options :

1. ✗ Andhra Pradesh

2. ✓ Odisha

3. ✗ Gujarat

4. ✗ Jharkhand

Question Number : 26 Question Id : 9003002066 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The most sensitive unit operation in mineral processing is

Options :

1. ✗ Concentration

2. ✓ Comminution

3. ✗ Dewatering

4. ✗ Storage and handling

Question Number : 27 Question Id : 9003002067 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Indicate the most important industrial iron ore.

Options :

1. ✗ bauxite

2. ✗ chalcopyrite

3. ✓ hematite

4. ✗ sphalerite

Question Number : 28 Question Id : 9003002068 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the wrong statement.

Options :

1. ✗ Magnetic separation method can be employed to treat both dry & wet ores

2. ✗ Gyratory crusher is used for coarse crushing

3. ✗ Screens are of stationary, moving and vibratory types

Reduction ratio in crushing operation is defined as the ratio of minimum feed size to

4. ✓ the maximum product size

Question Number : 29 Question Id : 9003002069 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Unit operations involved in iron ore beneficiation are

Options :

1. ✓ crushing – screening - washing

2. ✗ drying – calcination – magnetic concentration

3. ✗ washing – agglomeration - calcination

4. ✗ crushing - magnetic concentration - calcination

Question Number : 30 Question Id : 9003002070 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the most important method for sizing the mineral particles.

Options :

1. ✓ screening

2. ✗ agglomeration

3. ✗ calcination

4. ✗ distillation

Question Number : 31 Question Id : 9003002071 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Steel can't be produced in cupola due to

Options :

1. ✗ high carbon pick up

2. ✗ melting temperature can't be obtained

3. ✗ sulfur can't be reduced

4. ✓ all above

Question Number : 32 Question Id : 9003002072 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The product from blast furnace is called

Options :

1. ✗ Cast Iron

2. ✗ Wrought Iron

3. ✓ Pig Iron

4. ✗ Steel

Question Number : 33 Question Id : 9003002073 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which furnace is not used for melting aluminium?

Options :

1. ✓ electric arc furnace

2. ✗ pot furnace

3. ✗ induction furnace

4. ✗ crucible furnace

Question Number : 34 Question Id : 9003002074 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a purpose of fluxing and flushing of aluminium alloy?

Options :

1. ✗ separation of dross from melt

2. ✓ removal of dissolved oxygen

3. ✗ removal of dissolved hydrogen

4. ✗ removal of dross entrapped

Question Number : 35 Question Id : 9003002075 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not an ore of copper?

Options :

1. ✗ malachite

2. ✗ azurite

3. ✗ cuprite

4. ✓ galena

Question Number : 36 Question Id : 9003002076 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which method is used to extract copper from sulphide ores?

Options :

1. ✓ froth flotation

2. ✗ leaching

3. ✗ screening

4. ✗ mechanical agitation

Question Number : 37 Question Id : 9003002077 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Smelting is done to eradicate unwanted materials like ..... to the fullest extent possible.

Options :

1. ✗ copper

2. ✗ copper and gangue minerals

3. ✗ sulfur

4. ✓ sulfur and gangue minerals

Question Number : 38 Question Id : 9003002078 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify magnesium ore from the following

Options :

1. ✗ magnetite

2. ✗ hematite

3. ✓ magnesite

4. ✗ limonite

Question Number : 39 Question Id : 9003002079 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

..... is a process used to extract magnesium from its ores.

Options :

1. ✗ Nitride

2. ✗ Farnsworth process

3. ✓ Ferrosilicon process

4. ✗ Mows process

Question Number : 40 Question Id : 9003002080 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The main raw material for manufacture of silicon carbide refractories is

Options :

1. ✗ Corundum

2. ✓ Carborundum

3. ✗ Bauxite

4. ✗ Periclase

Question Number : 41 Question Id : 9003002081 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Spalling of a refractory means its

Options :

1. ✗ Softening

2. ✓ Fracture due to uneven expansion at high temperature

3. ✗ Resistance to compressive loads

4. ✗ Resistance to chemical action of gases and molten fluxes

Question Number : 42 Question Id : 9003002082 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Continuous casting process is used to produce .....

Options :

1. ✖ machine beds

2. ✔ billets and slabs

3. ✖ crank shafts

4. ✖ bearings and bushes

Question Number : 43 Question Id : 9003002083 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Argon oxygen decarburization (AOD) is a process primarily used in …… making.

Options :

1. ✔ stainless steel

2. ✖ cast iron

3. ✖ nickel

4. ✖ tungsten

Question Number : 44 Question Id : 9003002084 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct statement.

Options :

1. ✗ Desulphurization is achieved by having a low lime concentration in the slag and a low oxygen activity in the metal bath.

2. ✗ Desulphurization is achieved by having a high lime concentration in the slag and a high oxygen activity in the metal bath.

3. ✗ Desulphurization is achieved by having a low lime concentration in the slag and a high oxygen activity in the metal bath.

4. ✓ Desulphurization is achieved by having a high lime concentration in the slag and a low oxygen activity in the metal bath.

Question Number : 45 Question Id : 9003002085 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Aluminium has ---------- crystal structure.

Options :

1. ✗ S.C.

2. ✗ B.C.C.

3. ✓ F.C.C.

4. ✗ H.C.P.

Question Number : 46 Question Id : 9003002086 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

Coordination number in face centered cubic crystal structure is

Options :

1. ✖ 10

2. ✔ 12

3. ✖ 16

4. ✖ 24

Question Number : 47 Question Id : 9003002087 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the bond associated with NaCl.

Options :

1. ✖ van der Waals bond

2. ✖ Covalent bond

3. ✖ Metallic bond

4. ✔ Ionic bond

Question Number : 48 Question Id : 9003002088 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Pearlite is a two-phased, lamellar structure composed of alternating layers of .....

Options :

1. ✓ ferrite and cementite

2. ✗ ferrite and ledeburite

3. ✗ cementite and ledeburite

4. ✗ austenite and cementite

Question Number : 49 Question Id : 9003002089 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is the hardest phase?

Options :

1. ✗ ferrite

2. ✗ pearlite

3. ✗ austenite

4. ✓ martensite

Question Number : 50 Question Id : 9003002090 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the percentage of carbon in mild steel?

Options :

1. ✗ 0.8 to 1.6

2. ✗ less than 0.05

3. ✓ 0.05 to 0.3

4. ✗ 0.4 to 0.8

Question Number : 51 Question Id : 9003002091 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Indicate the percentage of carbon that differentiate steel and cast iron.

Options :

1. ✗ 0.8

2. ✓ 2.0

3. ✗ 4.3

4. ✗ 6.7

Question Number : 52 Question Id : 9003002092 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Binary phase diagram is drawn between …… and …….

Options :

1. ✓ composition, temperature

2. ✖ temperature, time

3. ✖ composition, stress

4. ✖ stress, strain

Question Number : 53 Question Id : 9003002093 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct statement.

Options :

1. ✖ Annealing involves heating the steel to just above its upper critical point, soaked for a short period then allowed to cool in air.

2. ✔ Normalizing involves heating the steel to just above its upper critical point, soaked for a short period then allowed to cool in air.

3. ✖ Hardening involves heating the steel to just above its upper critical point, soaked for a short period then allowed to cool in air.

4. ✖ Tempering involves heating the steel to just above its upper critical point, soaked for a short period then allowed to cool in air.

Question Number : 54 Question Id : 9003002094 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

As per the Gibbs phase rule for general system, for a one component system with one phase, the number of degrees of freedom is

Options :

1. ✖ 0

2. ✔ 2

3. ✖ 4

4. ✖ 6

Question Number : 55 Question Id : 9003002095 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What are the phases present between liquidus and solidus lines?.

Options :

1. ✖ liquid phase

2. ✖ solid phase

3. ✔ liquid and solid phase

4. ✖ none of the above

Question Number : 56 Question Id : 9003002096 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In general eutectoid reaction, ……. transforms to ……...

Options :

1. ✖ liquid, solid

2. ✖ liquid, two solids

3. ✖ solid, solid

4. ✔ solid, two new solids

Question Number : 57 Question Id : 9003002097 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Melting point of aluminium in degree centigrade is equal to:

Options :

1. ✔ 660

2. ✖ 985

3. ✖ 1085

4. ✖ 1539

Question Number : 58 Question Id : 9003002098 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct expression for Bragg law

Options :

1. ✓ $n\lambda = 2d \sin\theta$

2. ✗ $n\lambda = 2d \sin 2\theta$

3. ✗ $n\lambda = d \sin\theta$

4. ✗ $n\lambda = 2 \sin\theta$

Question Number : 59 Question Id : 9003002099 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

X-ray diffraction is a powerful tool widely used in research and industry for characterization of

Options :

1. ✗ solid solutions

2. ✗ crystallite size and shape

3. ✗ crystal orientation

4. ✓ above all

Question Number : 60 Question Id : 9003002100 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which alloying element makes steel into stainless steel?

Options :

1. ✗ C

2. ✓ Cr

3. ✗ Al

4. ✗ Si

Question Number : 61 Question Id : 9003002101 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is used in electron microscope?

Options :

1. ✗ electron beams

2. ✗ magnetic fields

3. ✗ light waves

4. ✓ electron beams and magnetic fields

Question Number : 62 Question Id : 9003002102 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following carbides are used for cutting tools?

Options :

1. ✗ Silicon carbide

2. ✓ Tungsten carbide

3. ✖ Vanadium carbide

4. ✖ Chromium carbide

Question Number : 63 Question Id : 9003002103 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following does not combine with fiber to give composites?

Options :

1. ✖ metals

2. ✖ ceramics

3. ✔ non-metals

4. ✖ polymers

Question Number : 64 Question Id : 9003002104 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The electrical and electronic materials are classified into

Options :

1. ✖ conducting materials

2. ✖ dielectric materials

3. ✖ magnetic materials

4. ✓ all above

Question Number : 65 Question Id : 9003002105 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The best material for making permanent magnets is

Options :

1. ✗ aluminium

2. ✗ soft iron

3. ✓ alnico

4. ✗ copper

Question Number : 66 Question Id : 9003002106 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which material is used to make LDR for higher end requirements?

Options :

1. ✗ cadmium sulfide

2. ✓ lead selenide

3. ✗ zinc sulfide

4. ✗ copper sulfide

Question Number : 67 Question Id : 9003002107 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

..... is the ability of a body to absorb energy in the plastic range.

Options :

1. ✔ toughness

2. ✖ elasticity

3. ✖ strain

4. ✖ resilience

Question Number : 68 Question Id : 9003002108 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

..... material has identical properties in all directions.

Options :

1. ✖ elastic

2. ✖ plastic

3. ✔ isotropic

4. ✖ homogeneous

Question Number : 69 Question Id : 9003002109 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a point defect in crystals?

Options :

1. ✖ edge dislocation

2. ✔ interstitialcies

3. ✖ grain boundaries

4. ✖ cracks

Question Number : 70 Question Id : 9003002110 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In screw dislocation, the Burger's vector lies _____ to the dislocation line.

Options :

1. ✖ perpendicular

2. ✔ parallel

3. ✖ at an angle

4. ✖ sideways

Question Number : 71 Question Id : 9003002111 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct statement.

Options :

1. ✗ Nickel can form interstitial solid solution.

2. ✓ Carbon can form interstitial solid solution.

3. ✗ Copper can form interstitial solid solution.

4. ✗ Silver can form interstitial solid solution.

Question Number : 72 Question Id : 9003002112 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is not a strengthening mechanism?

Options :

1. ✗ grain size reduction

2. ✗ solid solution strengthening

3. ✗ strain hardening

4. ✓ grain size increment

Question Number : 73 Question Id : 9003002113 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Hall-Petch equation gives the relation between grain size and ___

Options :

1. ✗ toughness

2. ✗ ductility

3. ✓ yield strength

4. ✗ tensile strength

Question Number : 74 Question Id : 9003002114 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Ultimate tensile strength means?

Options :

1. ✗ minimum stress that a material can withstand while being stretched or pulled before breaking

2. ✗ maximum temperature that a material can withstand while being stretched or pulled before breaking

3. ✓ maximum stress that a material can withstand while being stretched or pulled before breaking

4. ✗ minimum temperature that a material can withstand while being stretched or pulled before breaking

Question Number : 75 Question Id : 9003002115 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which material doesn't show fatigue limit?

Options :

1. ✗ Titanium alloys

2. ✓ Aluminium

3. ✗ Stainless steel

4. ✗ High Strength Steel

Question Number : 76 Question Id : 9003002116 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Fatigue fracture consists _____

Options :

1. ✓ striations

2. ✗ strains

3. ✗ cleavage

4. ✗ cracks

Question Number : 77 Question Id : 9003002117 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is a slow rise of plastic deformation under the action of shear stresses when it is below the yield strength of the material?

Options :

1. ✗ brittle fracture

2. ✗ ductile fracture

3. ✓ creep

4. ✗ fatigue

Question Number : 78 Question Id : 9003002118 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Above what temperature is the phenomenon of creep important in steel?

Options :

1. ✗ 200 °C

2. ✓ 300 °C

3. ✗ 500 °C

4. ✗ 600 °C

Question Number : 79 Question Id : 9003002119 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The tendency of brittle fracture increases with

Options :

1. ✗ increase in temperature

2. ✓ increase in strain rate

3. ✗ decrease in strain rate

4. ✗ it does not depend on temperature or strain rate

Question Number : 80 Question Id : 9003002120 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following is related to brittle fracture?

Options :

1. ✗ Laundau theory

2. ✗ Dirac hole theory

3. ✗ Valence bond theory

4. ✓ Griffith's theory

Question Number : 81 Question Id : 9003002121 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Rockwell test utilizes _____ a measure of hardness.

Options :

1. ✗ load

2. ✓ depth of indentation

3. ✗ diameter of indentation

4. ✗ time of loading

Question Number : 82 Question Id : 9003002122 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

What is the unit of fracture toughness?

Options :

1. ✗ MPa

2. ✓ $MPa\sqrt{m}$

3. ✗ MPam

4. ✗ $MPam^2$

Question Number : 83 Question Id : 9003002123 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The brittle fracture is not observed in _____

Options :

1. ✗ BCC

2. ✓ FCC

3. ✗ HCP

4. ✗ SC

Question Number : 84 Question Id : 9003002124 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response

Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following exhibit brittle fracture?

Options :

1. ✓ cast iron

2. ✗ mild steel

3. ✗ aluminium

4. ✗ copper

Question Number : 85 Question Id : 9003002125 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Below which point does fatigue occur?

Options :

1. ✗ ultimate strength

2. ✗ fracture point

3. ✓ yield point

4. ✗ elastic limit

Question Number : 86 Question Id : 9003002126 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The ability of a metal workpiece to undergo plastic deformation without being damaged is known as ____

Options :

1. ✓ formability

2. ✗ stiffness

3. ✗ resilience

4. ✗ yield strength

Question Number : 87 Question Id : 9003002127 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A member is said to be under torsion when it is subjected to .....

Options :

1. ✗ axial tensile force

2. ✗ axial compressive force

3. ✓ moment about the axis

4. ✗ bending force

Question Number : 88 Question Id : 9003002128 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The Charpy specimen for impact test has a square cross section of

Options :

1. ✗ 10 x 10 mm and contains a 30° V notch, 2 mm deep with a 0.25 root radius

2. ✗ 10 x 10 mm and contains a 35° V notch, 2 mm deep with a 0.25 root radius

3. ✗ 10 x 10 mm and contains a 40° V notch, 2 mm deep with a 0.25 root radius

4. ✓ 10 x 10 mm and contains a 45° V notch, 2 mm deep with a 0.25 root radius

Question Number : 89 Question Id : 9003002129 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following exhibit high damping capacity?

Options :

1. ✗ steel

2. ✗ bronze

3. ✗ brass

4. ✓ cast iron

Question Number : 90 Question Id : 9003002130 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

How does pattern vary in size with casting?

Options :

1. ✓ Pattern is larger in size

2. ✗ Casting is larger in size

3. ✗ Both have same size

4. ✗ Size depends on other factors

Question Number : 91 Question Id : 9003002131 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The liquid metal that runs through the channels without friction in the mould obeys ……. theorem.

Options :

1. ✓ Bernoulli's theorem

2. ✗ Clausius theorem

3. ✗ Helmholtz's theorem

4. ✗ Carnot's theorem

Question Number : 92 Question Id : 9003002132 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Defects caused by the chilling of the casting are known as ……..

Options :

1. ✗ hot tears

2. ✓ hot spots

3. ✗ shrinkage cavity

4. ✗ swell

Question Number : 93 Question Id : 9003002133 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following synthetic resins are used for mixing with sand in shell moulding?

Options :

1. ✗ fiber glass resins

2. ✗ epoxy resins

3. ✓ thermosetting resins

4. ✗ Kevlar

Question Number : 94 Question Id : 9003002134 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

For melting cast iron in a foundry, ---------- furnace is used.

Options :

1. ✓ cupola

2. ✗ rocking arc

3. ✖ electric arc

4. ✖ blast

Question Number : 95 Question Id : 9003002135 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following components is mainly manufactured by metal forging?

Options :

1. ✖ piston

2. ✖ engine block

3. ✔ connecting rod

4. ✖ crankcase

Question Number : 96 Question Id : 9003002136 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In two high rolling mill, what is the direction of rolling of the two rollers?

Options :

1. ✖ stationary-anticlockwise

2. ✖ anticlockwise-anticlockwise

3. ✖ clockwise-clockwise

4. ✓ clockwise-anticlockwise

Question Number : 97 Question Id : 9003002137 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct extrusion process by which toothpaste tubes are made.

Options :

1. ✗ direct extrusion

2. ✓ indirect extrusion

3. ✗ hydrostatic extrusion

4. ✗ continuous extrusion

Question Number : 98 Question Id : 9003002138 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which defect takes place if the reduction per mass is very low during rolling?

Options :

1. ✗ zipper cracks

2. ✓ folds

3. ✗ laminations

4. ✗ alligatoring

Question Number : 99 Question Id : 9003002139 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The cracking occurring during the hydrostatic extrusion at low temperature is known as

Options :

1. ✗ crater effect

2. ✗ chevron effect

3. ✓ bamboo effect

4. ✗ earing defect

Question Number : 100 Question Id : 9003002140 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is a solid-state joining process?

Options :

1. ✗ Gas tungsten arc welding

2. ✗ Resistance spot welding

3. ✓ Friction welding

4. ✗ Submerged arc welding

Question Number : 101 Question Id : 9003002141 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Submerged Arc Welding is situated only for _____ position welding.

Options :

1. ✖ vertical

2. ✖ overhead

3. ✔ flat

4. ✖ inclined

Question Number : 102 Question Id : 9003002142 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following types of fuel gas is commonly used in gas welding?

Options :

1. ✔ acetylene

2. ✖ coal gas

3. ✖ biogas

4. ✖ methane

Question Number : 103 Question Id : 9003002143 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Process of forming metal powder by directing molten metal through an orifice and subjecting it to a jet of high pressure fluid is known as .....

Options :

1. ✓ atomization

2. ✗ reduction

3. ✗ crushing

4. ✗ electrolysis

Question Number : 104 Question Id : 9003002144 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Various stages in powder metallurgy process are

i) preparation of powder ii) Grading of powder

iii) Compacting of powder iv) Sintering

The correct sequence is

Options :

1. ✗ iii, i, ii, iv

2. ✗ i, iii, ii, iv

3. ✗ ii, i, iii, iv

4. ✓ i, ii, iii, iv

Question Number : 105 Question Id : 9003002145 Display Question Number : Yes Is Question Mandatory : No Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following is a powder metallurgy product?

Options :

1. ✗ connecting rod

2. ✓ tungsten carbide tool

3. ✗ machine bed

4. ✗ cylinder block

Question Number : 106 Question Id : 9003002146 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Identify the correct sintering temperature range for aluminium and its alloys.

Options :

1. ✗ 100°C - 150°C

2. ✗ 150°C - 200°C

3. ✓ 400°C - 500°C

4. ✗ 600°C - 700°C

Question Number : 107 Question Id : 9003002147 Display Question Number : Yes Is Question Mandatory : No Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which of the following methods of NDT requires leak proofing of casting before inspection?

Options :

1. ✖ impact test

2. ✖ visual inspection

3. ✖ sound test

4. ✔ pressure test

Question Number : 108 Question Id : 9003002148 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Which one of the following methods of inspection uses high frequency of sound waves for the detection of flaws in the castings?

Options :

1. ✖ penetrant test

2. ✖ radiography

3. ✖ pressure test

4. ✔ ultrasonic inspection

Question Number : 109 Question Id : 9003002149 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

In which type of test the capillary action principle is used?

Options :

1. ✗ Probe test

2. ✗ Bend liquid test

3. ✗ Dye penetrant test

4. ✓ Ultrasonic test

Question Number : 110 Question Id : 9003002150 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

A material can be magnetic particle tested if

Options :

1. ✓ material is ferromagnetic

2. ✗ material is non ferrous

3. ✗ thermally conductive

4. ✗ electrical resistive

Question Number : 111 Question Id : 9003002151 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If $f(x,y) = \begin{cases} \frac{-xy}{x^2+y^2} & (x,y) \neq (0,0) \\ 0 & (x,y) = (0,0) \end{cases}$, then which of the following is true?

Options :

1. ✓ $f_x(0,0), f_y(0,0)$ exists but $f(x,y)$ is not continuous at $(0,0)$.

2. ✗ $f(x,y)$ is continuous at $(0,0)$ but both $f_x(0,0), f_y(0,0)$ do not exists.

3. ✗ $f(x,y)$ is continuous at $(0,0)$ and also both $f_x(0,0), f_y(0,0)$ exists.

4. ✗ $f(x,y)$ is not continuous at $(0,0)$ and also $f_x(0,0)$ do not exists.

Question Number : 112 Question Id : 9003002152 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The coefficients b_n in the half-range Sine series of $f(x) = \begin{cases} 4 & if \quad 0 < x < \frac{\pi}{2} \\ 0 & if \quad \frac{\pi}{2} < x < \pi \end{cases}$ are

Options :

1. ✗ $\frac{1}{n\pi}\left(1-\cos\frac{n\pi}{2}\right), n = 1,2 \ldots.$

2. ✓ $\frac{8}{n\pi}\left(1-\cos\frac{n\pi}{2}\right), n = 1,2 \ldots.$

3. ✗ $\frac{1}{\pi}\left(1-\cos\frac{n\pi}{2}\right), n = 1,2 \ldots.$

4. ✗ $\frac{8}{\pi}\left(1-\cos\frac{n\pi}{2}\right), n = 1,2 \ldots.$

Question Number : 113 Question Id : 9003002153 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The value of $\oint x^2\,dy + y^2\,dx$ (where C is the triangle bounded by the lines $x = 0, x + y = 1$ and $y = 0$) is

Options :

1. ✓ 0

2. ✗ 1

3. ✗ -1

4. ✗ 2

Question Number : 114 Question Id : 9003002154 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If X is Poisson random variable with mean 3, then $P\{|X - 3| < 1\}$ is

Options :

1. ✗ $\frac{27e^{-3}}{2}$

2. ✓ $\frac{9e^{-3}}{2}$

3. ✗ $\frac{3e^{-3}}{2}$

4. ✗ $\frac{e^{-3}}{6}$

Question Number : 115 Question Id : 9003002155 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Let X be a normal random variable with unknown mean μ and variance.

If $P[X \leq 40] = 0.0668$ and $P[X > 89] = 0.0228$, then μ and σ are

(use $\Phi(-1.5) = 0.0668$ and $\Phi(2.0) = 0.9772$ from standard normal table)

Options :

1. ✗ 54, 14

2. ✗ 51, 22

3. ✓ 61, 14

4. ✗ 61, 18

Question Number : 116 Question Id : 9003002156 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

The operation count of the following algorithm

$$do\ \ i = 1, n$$
$$do\ k = 1, n$$
$$val = val + C(i,k) * B(k,i)$$
$$end$$
$$do\ j = 1, i$$
$$A(i,j) = C(i,j) + B(i,j) * val$$
$$end$$
$$val = 0$$
$$end$$

(where A, B *and* C are $n \times n$ matrices) is

Options :

1. ✖ $n^2 + n$

2. ✖ $2n^2 - n$

3. ✔ $3n^2 + n$

4. ✖ $2n^2 + 1$

Question Number : 117 Question Id : 9003002157 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Solution of Initial value problem $\frac{dy}{dx} + 3y = \sin x\,; y\left(\frac{\pi}{2}\right) = 0.3$ is

Options :

1. ✗ $0.3\sin x + 0.1\,cos\,x$

2. ✓ $0.3\sin x - 0.1\,cos\,x$

3. ✗ $0.3\cos x - 0.1\sin x + e^{-3x}$

4. ✗ $0.3\sin x - 0.1\cos x + e^{-3x}$

Question Number : 118 Question Id : 9003002158 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the Laplace transform of a function $f(x)$ is given by $\frac{s+3}{(s+1)(s+2)}$, then $f(0)$ is

Options :

1. ✗ -1

2. ✗ 2

3. ✗ 0

4. ✓ 1

Question Number : 119 Question Id : 9003002159 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Consider the system of equations $AX = 0$, where A is a 2×3 matrix. Then it must be true that:

Options :

1. ✓ There exists a non-zero solution.

2. ✗ There are at least two linearly independent solutions.

3. ✗ Any solution $X = (x_1, x_2, x_3)^T$ satisfies $x_1 + x_2 + x_3 = 0$

4. ✗ Any two solutions are linearly dependent.

Question Number : 120 Question Id : 9003002160 Display Question Number : Yes Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

If the characteristic polynomial of a 3×3 matrix A is given by $ch_A(x) = x^3 - 2x^2 - x + 28$, then trace of A and determinant of A are respectively,

Options :

1. ✗ 2 and 28

2. ✗ -2 and -28

3. ✓ 2 and -28

4. ✗ -1 and -28