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

4. ✔ Reduction ratio in crushing operation is defined as the ratio of minimum feed size to 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. ✖ 100ºC - 150ºC

2. ✖ 150ºC - 200ºC

3. ✔ 400ºC - 500ºC

4. ✖ 600ºC - 700ºC

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