

**Question Paper Name:** 5237 Cornerstone Ideas in Metallurgical Engineering and Materials Sciences 30th June 2019 Shift 1  
**Subject Name:** Cornerstone Ideas in Metallurgical Engineering and Materials Sciences  
**Creation Date:** 2019-06-30 13:01:45  
**Duration:** 180  
**Total Marks:** 120  
**Display Marks:** Yes

### Cornerstone Ideas in Metallurgical Engineering and Materials Sciences

**Group Number :** 1  
**Group Id :** 489994180  
**Group Maximum Duration :** 0  
**Group Minimum Duration :** 120  
**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 120

### Cornerstone Ideas in Metallurgical Engineering and Materials Sciences

**Section Id :** 489994236  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 120  
**Number of Questions to be attempted:** 120  
**Section Marks:** 120  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 489994253  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**  
**Correct Marks : 1 Wrong Marks : 0**

In the model classroom we discussed in our lectures, the round tables were set

- (a) to better utilize space.
- (b) for active cooperative learning.
- (c) due to their low cost.

Options :

1. 1

Question Number : 2 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“The Bohr radius, which is the radius of a H atom is ~ \_\_\_\_ Å.”

- a. 0.5
- b. 5
- c. 50
- d. 500

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 3 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Materials science has no relation to chemistry or other engineering disciplines.” (True / False)

- a. True
- b. False
- c. Neither true nor false
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 4 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The materials tetrahedron was employed in the class as a tool for project ideation. The corners of this tetrahedron represent:

- a. Chemistry, physics, mathematics, engineering.
- b. Structure, properties, processing, performance.
- c. Composition, structure, properties, microstructure.

Options :

- 1. 1
- 2. 2
- 3. 3

Correct Marks : 1 Wrong Marks : 0

Heutagogy is

- a. methods and practice of instructing children.
- b. Methods and practice of instructing a discipline.
- c. self-determined learning (as is the case for us teachers or/and to a large extent for MS/PhD students).

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 6 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Androgogy involves

- a. Methods and practice employed for instructing an academic discipline.
- b. Methods and practice employed for instructing adults.

Options :

- 1. 1
- 2. 2

Question Number : 7 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the classroom setting you are observing in this Swayam course, the following are evident:

- a. practice of standing instructions to enforce our academic discipline on the students.
- b. practice of pedagogy, androgogy, and active-cooperative learning (eg. guided reading, think-pair-share).

Options :

- 1. 1
- 2. 2

Question Number : 8 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Some of the classification systems we saw include:

- a. metals, ceramics, glasses, polymers and elastomers, semiconductors, liquid crystals, composite materials, and nanomaterials.
- b. scrap and useful materials.

Options :

- 1. 1

Question Number : 9 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

‘Ceramics and glasses are readily machinable.’

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 10 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A single crystalline material with band gap  $\sim 5$  eV is expected to be:

- a. translucent
- b. opaque
- c. transparent

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 11 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

For load bearing applications, the most common material deployed are:

- a. ceramics
- b. polymers
- c. metals

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 12 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

tells you the following. "I think, ceramics usually have low melting points (below 1000oC). A possible reasonable response could be:

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- a. that is absurd!
- b. why don't you just look up the melting points of some common ceramics, and tabulate it, and evaluate your response. You may find that you need to revisit your understanding of melting of ceramics. Most of the ceramics I am aware of in fact have melting points between 2000-4000oC.

Options :

1. 1
2. 2

Question Number : 13 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The classroom pointer you use is likely to use a diode laser. This laser is made possible due to the following materials category:

- a. semiconductors.
- b. insulators.

Options :

1. 1
2. 2

Question Number : 14 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

(Give a reasonable completion for the sentence that begins with the following)

When showing graphical trends to your students, you can focus on:

- a. providing physical interpretations for the slopes and changes in slopes (i.e derivatives of the curve), since this helps the student critically think about any curve they are likely to encounter in future. In fact a single graph can become an opportunity to discuss case studies, or connect several concepts.
- b. covering syllabus as quickly as possible, since the student ought to take university exams and ace it, so as to satisfy the administrators and parents. The students and I am under pressure to satisfy these external agents after all!

Options :

1. 1
2. 2

Question Number : 15 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Active cooperative learning (ACL) allows PLA.

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 16 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the class, we deduced the Gibb's phase rule, which states:

- a.  $P + F = C + 2$  ( $P$  = number of phases,  $F$  = degrees of freedom,  $C$  = number of components)
- b. (reduced Gibb's rule, for 'all solid' experiments)  $P + F = C + 1$
- c. Both (a, b)

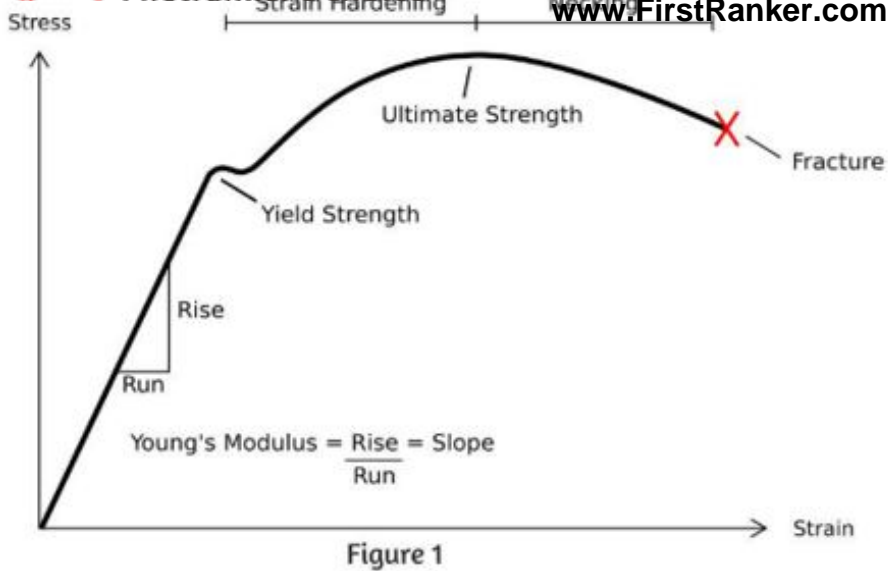
Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 17 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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Source: Instructables

The following curve represents a

- a. brittle material.
- b. ductile material.

Options :

- 1. 1
- 2. 2

Question Number : 18 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

'True stress-strain curve is always towards the left of the engineering stress-strain curve.' True / False

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 19 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



material has Young's modulus of  $\sim 1$  GPa. What is this material likely to be?

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- a. Polymer
- b. Ceramic
- c. Metal
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 20 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the plastic regime, the material flow is attributed to:

- a. creep
- b. atomic diffusion
- c. dislocation motion
- d. none of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 21 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In case of polymers, the deformation that is time and temperature dependent is called:

- a. Creep
- b. viscoelasticity
- c. Hookian behaviour
- d. Darcian behaviour

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 22 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

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- a. its high cost.
- b. total internal reflection of light.
- c. its low electrical conductivity.
- d. its magnetic behaviour.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 23 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The materials tetrahedron has the following at its vertices:

- (a) Structure, property, processing, performance
- (b) Property, processing, performance, cost
- (c) Chemistry, physics, engineering, economics
- (d) Design, development, research, performance

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 24 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Ceramics and glasses usually have good corrosion resistance and high temperature creep resistance.” True / False

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 25 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



- a. superposition principle
- b. principle of combined action.
- c. D'Alambert's principle
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 26 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In the CuCl crystal structure, what is the nature of 'hole' associated with the location of Cl-?

- a. Tetrahedral
- b. Octahedral

Options :

- 1. 1
- 2. 2

Question Number : 27 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What is the typical coordination number of Si in a silicate mineral?

- a. 4
- b. 6
- c. 8
- d. 12

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 28 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

use of heat. This usually results in reduced ductility." If you had to undo the advantages received

from cold working, what process could you employ?

- a. Further cold working
- b. Recovery and recrystallization
- c. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 29 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The most symmetric of all crystal systems is:

- a. Tetragonal
- b. Orthorhombic
- c. Cubic
- d. Rhombohedral

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 30 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"NaCl is a material which has predominantly covalent bonding". (True / False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 31 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. Infinity
- b. 1
- c. 0
- d. Ill-defined

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 32 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Zachariasen's rules are applicable to explain the structure of silicates and borosilicate glasses.

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 33 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Magnetism arises in material due to spins associated with electrons."

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 34 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"The most common elemental ferromagnetic materials are \_\_\_\_, Ni, and Co."

- a. Oxygen
- b. polyethylene
- c. Iron
- d. None of the above

Options :

- 1. 1

3. 3

4. 4

Question Number : 35 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Bandgap of a material is 2 eV. The wavelength at which it would absorb is \_\_\_\_ nm

- a. 310 nm
- b. 620 nm
- c. 1240 nm
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 36 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Band gap influences the way a material interacts with light." (True / False)

- a. True
- b. False
- c. This cannot be answered as of now

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 37 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The wavelength of light and energy of associated photon is related by ....

- a. Bohr's atomic model
- b. Wien's displacement law
- c. Planck's law
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 38 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Planck's law and de Broglie momentum-wavelength equation laid the foundations for

- a. quantum theory
- b. classical mechanics
- c. linear algebra
- d. none of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 39 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"AC magnetic susceptibility would be a complex quantity too."

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 40 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Thermal conductivity of metals can be 100 times or more than that of most polymers and ceramics" (True/ False)

- a. False
- b. True

Options :

- 1. 1
- 2. 2

Question Number : 41 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Does the speed of sound in a medium depend on its Bulk modulus and density?

- a. ~~No~~
- b. Yes

2. 2

Question Number : 42 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Radius ratios do not determine coordination numbers.”

- a. False
- b. True

Options :

1. 1  
2. 2

Question Number : 43 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Al needs to be doped into Si, for making a p-type material. This can be done by deposition of Al on Si, followed by heat treatment (thermal diffusion).”

- a. False
- b. True

Options :

1. 1  
2. 2

Question Number : 44 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Should learning experience be transformative to the student?

- a. Yes
- b. No

Options :

1. 1  
2. 2

Question Number : 45 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Constructivist approach to knowledge is

- a. Ontological
- b. Epistemological
- c. Ethical

Options :



2. 2

3. 3

Question Number : 46 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Tree diagrams, spider maps, mind maps, concept maps are examples of:

- a. tools of information science.
- b. ontological maps.

Options :

1. 1

2. 2

Question Number : 47 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Situated cognition is a theory that posits that knowing and \_\_\_\_\_ are inseparable.

(Fill in the blank)

- a. doing
- b. success
- c. talking

Options :

1. 1

2. 2

3. 3

Question Number : 48 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The assessment types we discussed in the class include:

- a. normative
- b. ipsative
- c. criteria-referenced
- d. all of the above

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 49 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

(True/ False)

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a. True

b. False

Options :

1. 1

2. 2

Question Number : 50 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Two polymers with similar formulae should be very similar in their properties”. (True/ False)

a. True

b. False

Options :

1. 1

2. 2

Question Number : 51 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Cross linked and network polymers are the same”. (True/ False)

a. True

b. False

Options :

1. 1

2. 2

Question Number : 52 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“The degree of polymerization is readily related to the weight averaged molecular weights of a polymer.” (True/ False)

a. True

b. False

Options :

1. 1

2. 2

Question Number : 53 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

a. True

b. False

Options :

1. 1

2. 2

Question Number : 54 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

When polymers are heated to the point wherein they start becoming rubbery, indicate that

a. secondary bonds are overcome, and the chains are sliding past each other.

b. primary bonds are overcome, and the chains are sliding past each other.

c. both secondary and primary bonds are overcome, and the chains are sliding past each other.

d. none of the above

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 55 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The Kauzmann paradox is a fundamentally \_\_\_\_\_ argument.

a. graphical

b. experimental

c. abstract mathematical

d. none of the above

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 56 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Crystalline; if process parameters are kept the same between the two samples?

- a. Linear polymers
- b. Ladder polymer
- c. Both would be equally crystalline
- d. Neither would be crystalline

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 57 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The means to study spherulites in polymers is by employing:

- (a) Optical spectroscopy
- (b) X-ray diffractography
- (c) Micrography (optical and electron)
- (d) All of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 58 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

If a sample X of a polymer is modified to improve crystallinity, the ductility

- a. reduces
- b. increases

Options :

- 1. 1
- 2. 2

Question Number : 59 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. double layer
- b. Debye
- c. fringed micelle

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 60 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Polymer degradation is often an oxidation or reaction and \_\_\_\_\_ phenomenon.

- a. diffusion driven.
- b. tension driven
- c. compression driven

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 61 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“When all other parameters are kept constant, typically as the crystallinity increases, the max. elongation increases”.

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 62 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Measurements used to determine toughness include Chevron V, Izod and \_\_\_\_\_ tests.

- a. Charpe
- b. Tensile stress
- c. UTM

Options :

- 1. 1

Question Number : 63 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“When a polymer is subjected to tension, and finally undergoes fracture / crazing, at the crack tip, an enhancement of fibrillar arrangement is seen”. (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 64 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“High density polyethylene” is more dense than “Low density polyethylene” due to difference in:

- (a) chemical composition
- (b) mer unit present.
- (c) degree of branching and hence crystallinity.
- (d) none of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 65 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Through an experiment, a material was found to have an electrical conductivity of  $6.3 \times 10^7$  S/m. What is this material likely to be?

- a. Metal
- b. Ceramic
- c. Polymer

Options :

- 1. 1
- 2. 2
- 3. 3

Common salt (NaCl) dissolves in water since it is:

- a. an ionic compound.
- b. a covalent compound.
- c. a van der Waal's solid.

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 67 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Polymers have lower equilibrium vapour pressure than their corresponding monomers."(True/False)

- a. False
- b. True

Options :

- 1. 1
- 2. 2

Question Number : 68 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

In class we saw that a given material can be rendered tough, brittle or soft based on its molecular weight and \_\_\_\_\_. (fill the blank)

- a. crystallinity
- b. glass transition temperature
- c. density
- d. none of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 69 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



a. True

b. False

Options :

1. 1

2. 2

Question Number : 70 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"It is not possible to make foams of ceramics." (True/ False)

a. True

b. False

Options :

1. 1

2. 2

Question Number : 71 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Morphology can be studied using the following method:

(a) Micrography (optical and electron)

(b) X-ray diffractography

(c) Optical spectroscopy

(d) All of the above

Options :

1. 1

2. 2

3. 3

4. 4

Question Number : 72 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Based on the Piaget's cognitive development theory, we may consider most students in colleges to be at the \_\_\_\_\_ stage". (Fill blank)

a. Sensorimotor

b. Pre-operational

c. Concrete operational

d. Formal operational

1. 1
2. 2
3. 3
4. 4

Question Number : 73 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Socratic circle employs the Socratic method, which uses a series of questions to guide the learner, towards self-organization of learning content.” (True/ False)

- a. True
- b. False

Options :

1. 1
2. 2

Question Number : 74 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“The \_\_\_\_ taxonomy is helpful in characterizing the levels of learning.”

- a. Vicker's
- b. Vigotsky's
- c. Piaget's
- d. Bloom's

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 75 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Atomic numbers of elements are integers. (True/ False)

- a. True
- b. False

Options :

1. 1
2. 2

Question Number : 76 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 77 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Socratic method is fundamentally incompatible with active cooperative learning."

(True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 78 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Motivation is frequently classified into two types: intrinsic and \_\_\_\_\_. (fill in the blank)

- a. external
- b. extrinsic
- c. fundamental
- d. none of the above.

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 79 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"The teacher can make the learner diversity in a given class, an asset for active cooperative learning." (True / False)

- a. True
- b. False

Options :

- 1. 1

Question Number : 80 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

The student development movement recognizes the \_\_\_\_\_ of students.

- (a) agency and individuality
- (b) difficulties
- (c) affiliations
- (d) economic status

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 81 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“A humanistic approach to education emphasizes the holistic (intellectual, emotional and social) formation of the student” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 82 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“If the lesson challenges the student too little, it can result in boredom (according to Flow theory).”

- a. Yes
- b. No

Options :

- 1. 1
- 2. 2

Question Number : 83 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. dynamic
- b. static

Options :

1. 1
2. 2

Question Number : 84 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Topical choices can be enabled by thinking in terms of using classroom interactions for scaffolding of information.” (True/ False)

- a. True
- b. False

Options :

1. 1
2. 2

Question Number : 85 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Curriculum should never evolve!” (True/ False)

- a. True
- b. False

Options :

1. 1
2. 2

Question Number : 86 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“ Superconductivity, ferroelectricity, piezoelectricity, pyroelectricity, magnetostriction...” are properties most likely found in:

- a. Ceramics
- b. Metals
- c. Polymers
- d. None of the above.

Options :

1. 1
2. 2
3. 3
4. 4

Correct Marks : 1 Wrong Marks : 0

“Polymers can never conduct.” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 88 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Catalytic properties are often amplified in the nano-scale owing the high specific surface area (m<sup>2</sup>/gram) of these materials” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 89 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Does acoustic signal / passage of sound in a material depend on its mechanical properties (say, Young's modulus)? (Yes/ No)

- a. Yes
- b. No

Options :

- 1. 1
- 2. 2

Question Number : 90 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Many materials yield or flow plastically at a somewhat well-defined stress (called upper yield point) that falls rapidly to lower steady value (lower yield point) as deformation continues. Any increase in the stress beyond the yield point causes greater permanent deformation. ” (True/ False)

- a. True
- b. False

Options :

- 1. 1

Question Number : 91 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Endurance limit is the maximum stress below which a material can theoretically withstand an infinite number of stress-strain cycles.” (True/ False)

- a. False
- b. True

Options :

- 1. 1
- 2. 2

Question Number : 92 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“After the yield point, the curve typically decreases slightly because of dislocations escaping from Cottrell atmospheres. As deformation continues, the stress increases on account of strain hardening until it reaches the ultimate tensile stress (beyond which necking occurs).” (True/ False)

- a. False
- b. True

Options :

- 1. 1
- 2. 2

Question Number : 93 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Most composites have stress-strain curves that are completely invariant with respect to the strain rate.” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 94 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



- a. heat needed to increase temperature of an object by a unit degree C.
- b. heat needed to change the materials physical state.
- c. heat flow rate per unit area per unit temperature gradient.
- d. relative change in dimension per unit change in temperature.

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 95 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Thermal conductivity is the:

- a. heat needed to increase temperature of an object by a unit degree C.
- b. heat needed to change the materials physical state.
- c. heat flow rate per unit area per unit temperature gradient.
- d. relative change in dimension per unit change in temperature.

Options :

1. 1
2. 2
3. 3
4. 4

Question Number : 96 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Can iron ever be vaporized? (Yes/ No)

- a. No
- b. Yes

Options :

1. 1
2. 2

Question Number : 97 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

temperature at which a solid melts can depend on impurities that may be intentionally or unintentionally in it." (Yes/ No)

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- a. No
- b. Yes

Options :

- 1. 1
- 2. 2

Question Number : 98 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"There exists no perfect dielectric. Hence one is to expect some leakage currents, and losses in even the champion dielectric materials." (Yes/ No)

- a. No
- b. Yes

Options :

- 1. 1
- 2. 2

Question Number : 99 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Electric field at which the dielectric begins to conduct is called the \_\_\_\_\_ field"

- a. Critical
- b. Threshold
- c. Breakdown
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3
- 4. 4

Question Number : 100 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Dielectric constants beyond a few hundred is just impossible!" (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Correct Marks : 1 Wrong Marks : 0

“Eddy current testing can be used to non-destructively test cracks in materials.” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 102 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Can we use magnets to achieve refrigeration? (Yes/ No)

- a. Yes
- b. No

Options :

- 1. 1
- 2. 2

Question Number : 103 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Refractive index and dielectric constant of a material are unrelated.” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 104 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“The velocity of sound in a crystal depends on the direction of wave motion.” (True/ False)

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 105 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

- a. 15 eV  
b. <1 eV  
c. 2-5 eV  
d. Few meV

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 106 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

Van der Waal's bond, an example of a secondary bond, is typically having strength \_\_\_\_ eV.

- a. ~0.001 to 0.1  
b. 1-3  
c. 2-4  
d. 4-10

Options :

1. 1  
2. 2  
3. 3  
4. 4

Question Number : 107 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Allotropy is strictly defined only for crystalline materials." (True/ False)

- a. True  
b. False

Options :

1. 1  
2. 2

Question Number : 108 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0



a. Yes

b. No

Options :

1. 1

2. 2

Question Number : 109 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Diffusion can involve hopping of the atoms through either interstitial sites or vacancies."

(Yes/No)

a. Yes

b. No

Options :

1. 1

2. 2

Question Number : 110 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

"Can the idea of diffusion be extended to charged particles in a solid (say electrons in a solid)?"

(Yes/No)

a. Yes

b. No

Options :

1. 1

2. 2

Question Number : 111 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

What does sharp features in diffraction pattern tell you?

a. The sample studied is a composite.

b. The sample studied is crystalline.

c. The sample studied is a glass.

d. None of the above.

Options :

1. 1

2. 2

3. 3

4. 4

Correct Marks : 1 Wrong Marks : 0

“Slow crystallization can help improve crystallinity in the final product.” (Yes/No)

- a. Yes
- b. No

Options :

- 1. 1
- 2. 2

Question Number : 113 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Almost all solids have short range order”

- a. False
- b. True

Options :

- 1. 1
- 2. 2

Question Number : 114 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Ceramics typically have densities less than 5 g/cm<sup>3</sup>; which is about 50-30% the density of metals.”

- a. True
- b. False

Options :

- 1. 1
- 2. 2

Question Number : 115 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

A certain material is found to have a resistivity of 1015 Ohm.m. It may be classified as:

- a. Semiconductor
- b. Conductor
- c. Insulator
- d. None of the above

Options :

- 1. 1
- 2. 2
- 3. 3

Question Number : 116 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Grain boundaries can impede dislocation motion. Hence grain size does influence strength of a material.” (Yes/No)

- a. No
- b. Yes

Options :

- 1. 1
- 2. 2

Question Number : 117 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Heat treatment to ensure recrystallization can help remove stresses in a sample”. (Yes/No)

- a. No
- b. Yes

Options :

- 1. 1
- 2. 2

Question Number : 118 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“Knowledge survey is a method to evaluate delivery of a course through the gathering of feedback from the learner on the level of the knowledge they acquired after the completion of the instruction.” (Yes/No)

- a. No
- b. Yes

Options :

- 1. 1
- 2. 2

Question Number : 119 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 1 Wrong Marks : 0

“In many ways, classroom atmosphere reflects the quality of learning.” (Yes/No)

- a. No
- b. Yes

Options :

- 1. 1
- 2. 2



Correct Marks : 1 Wrong Marks : 0

“The degree of polymerization, or DP, is the number of monomeric units in a macromolecule or polymer or oligomer molecule.” (Yes/ No)

- a. Yes
- b. No

Options :

- 1. 1
- 2. 2

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