

# National Testing Agency

**Question Paper Name:** 908 Nanoscience 29th May 2019 Shift 2 Set1  
**Subject Name:** Nanoscience  
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**Duration:** 180  
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## Nanoscience

**Group Number :** 1  
**Group Id :** 128206178  
**Group Maximum Duration :** 0  
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**Revisit allowed for view? :** No  
**Revisit allowed for edit? :** No  
**Break time:** 0  
**Group Marks:** 100

## PART A

**Section Id :** 128206290  
**Section Number :** 1  
**Section type :** Online  
**Mandatory or Optional:** Mandatory  
**Number of Questions:** 25  
**Number of Questions to be attempted:** 25  
**Section Marks:** 50  
**Display Number Panel:** Yes  
**Group All Questions:** No

**Sub-Section Number:** 1  
**Sub-Section Id:** 128206469  
**Question Shuffling Allowed :** Yes

**Question Number : 1 Question Id : 12820610315 Question Type : MCQ Option Shuffling : No Display Question Number : Yes**  
**Single Line Question Option : No Option Orientation : Vertical**  
**Correct Marks : 2 Wrong Marks : 0**

### Applied Research is directed towards

- a) Problem solving
- b) Action oriented research
- c) Real time problems
- d) All the above

**Options :**

- 12820640779. A
- 12820640780. B
- 12820640781. C
- 12820640782. D

Question Number : 2 Question Id : 12820610316 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**The following are features of a good research study except**

- a) Should be reproducible
- b) Should be systematic and objective
- c) Should be completed in three months
- d) Should be ethical and unbiased

Options :

- 12820640783. A
- 12820640784. B
- 12820640785. C
- 12820640786. D

Question Number : 3 Question Id : 12820610317 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Random Access Memory (RAM) is which storage of device?**

- a) Primary
- b) Secondary
- c) Tertiary
- d) Off line

Options :

- 12820640787. A
- 12820640788. B
- 12820640789. C
- 12820640790. D

Question Number : 4 Question Id : 12820610318 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which of the following is not true about Absorption spectroscopy?**

- a) It involves transmission
- b) Scattering is kept minimum
- c) Reflection is kept maximum
- d) Intensity of radiation leaving the substance is an indication of concentration

Options :

- 12820640791. A
- 12820640792. B
- 12820640793. C
- 12820640794. D

Question Number : 5 Question Id : 12820610319 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Purpose of a mass spectrometer is to**

- a) determine the charge of a particle
- b) determine the particles
- c) determine the mass of an atom
- d) provide data for data loggers

Options :

12820640795. A

12820640796. B

12820640797. C

12820640798. D

Question Number : 6 Question Id : 12820610320 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

----- is a type of conclusive research which is especially formulated to give a description about a phenomenon or group.

- a) Longitudinal research design
- b) Exploratory research design
- c) Descriptive research design
- d) Two tiered research design

Options :

12820640799. A

12820640800. B

12820640801. C

12820640802. D

Question Number : 7 Question Id : 12820610321 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Qualitative research is**

- a) essentially the same as quantitative research
- b) generally employs rigorous mathematical analysis
- c) is subjective in nature
- d) involves objective measurements and statistical analysis

Options :

12820640803. A

12820640804. B

12820640805. C

12820640806. D

Question Number : 8 Question Id : 12820610322 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which of the following is not a probability sampling plan?**

- a) Systematic sampling
- b) Cluster sampling
- c) Convenience sampling
- d) Stratified sampling

**Options :**

12820640807. A

12820640808. B

12820640809. C

12820640810. D

**Question Number : 9 Question Id : 12820610323 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**When discussing the caveats of the study, the restraints and shortfalls in data collection, sampling design or scope of the study, one is writing the ----- section of the research report.**

- a) Conclusions of the study
- b) Findings of the study
- c) Problem definition
- d) Limitations of the study

**Options :**

12820640811. A

12820640812. B

12820640813. C

12820640814. D

**Question Number : 10 Question Id : 12820610324 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**----- can be used to display the steps or component of a process.**

- a) Pie charts
- b) Pictographs
- c) Flow charts
- d) Histograms

**Options :**

12820640815. A

12820640816. B

12820640817. C

12820640818. D

**Question Number : 11 Question Id : 12820610325 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following is the relation between hydrogen ion and hydroxyl ion concentration of pure water?**

- a) Value of hydrogen ion concentration is greater
- b) Value of hydroxyl ion concentration is greater
- c) They are both always the same
- d) The concentrations keep changing

**Options :**

12820640819. A

12820640820. B

12820640821. C

12820640822. D

**Question Number : 12 Question Id : 12820610326 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**----- is best for the calculation with the help of formulae and ----- is best for presenting the data to a group.**

- a) Excel and Powerpoint presentation
- b) Word and Excel
- c) Excel and Word
- d) None of the above

**Options :**

12820640823. A

12820640824. B

12820640825. C

12820640826. D

**Question Number : 13 Question Id : 12820610327 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**----- has helped the researchers all over the world to work in collaboration**

- a) Information and Communication Technology (ICT)
- b) Word Processing
- c) Plagiarism
- d) All the above

**Options :**

12820640827. A

12820640828. B

12820640829. C

12820640830. D

**Question Number : 14 Question Id : 12820610328 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The practice of showing someone else's work/ idea/ paper as one's own without proper acknowledgement is termed as**

- a) Citation
- b) Plagiarism
- c) Referencing
- d) None of the above

**Options :**

- 12820640831. A
- 12820640832. B
- 12820640833. C
- 12820640834. D

**Question Number : 15 Question Id : 12820610329 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following is E-journal database?**

- a) PubChem
- b) PubMed
- c) IEEE Xplore
- d) All the above

**Options :**

- 12820640835. A
- 12820640836. B
- 12820640837. C
- 12820640838. D

**Question Number : 16 Question Id : 12820610330 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**..... is a way to systematically solve the research problem**

- a) Technique
- b) Operations
- c) Research methodology
- d) Research Process

**Options :**

- 12820640839. A
- 12820640840. B
- 12820640841. C
- 12820640842. D

**Question Number : 17 Question Id : 12820610331 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The original source from which researcher collects information is**

- a) Primary Source
- b) Secondary Source
- c) Both primary and secondary
- d) None of these

**Options :**

12820640843. A

12820640844. B

12820640845. C

12820640846. D

**Question Number : 18 Question Id : 12820610332 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**A short summary of Technical Report is called**

- a) Article
- b) Research Abstract
- c) Publication
- d) Guide

**Options :**

12820640847. A

12820640848. B

12820640849. C

12820640850. D

**Question Number : 19 Question Id : 12820610333 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The minimum distance between two points which a microscope can distinguish depend on its**

- a) Magnification
- b) Illumination
- c) Resolving power
- d) Fluorescence

**Options :**

12820640851. A

12820640852. B

12820640853. C

12820640854. D

**Question Number : 20 Question Id : 12820610334 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**A quantitative statement about a population is called**

- a) Research hypothesis
- b) Composite hypothesis
- c) Simple hypothesis
- d) Statistical hypothesis

**Options :**

12820640855. A

12820640856. B

12820640857. C

12820640858. D

**Question Number : 21 Question Id : 12820610335 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following wavelength is not in the visible range of the electromagnetic spectrum?**

- a)  $\lambda_{\max} = 480 \text{ nm}$
- b)  $\lambda_{\max} = 550 \text{ nm}$
- c)  $\lambda_{\max} = 250 \text{ nm}$
- d)  $\lambda_{\max} = 750 \text{ nm}$

**Options :**

12820640859. A

12820640860. B

12820640861. C

12820640862. D

**Question Number : 22 Question Id : 12820610336 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**What is the full form of IPR?**

- a) Intellectual Property Rights
- b) Intelligent Property Right
- c) Intellectual Proprietary Rights
- d) Intelligent Property Rotation

**Options :**

12820640863. A

12820640864. B

12820640865. C

12820640866. D

**Question Number : 23 Question Id : 12820610337 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**



**Which of the following is used in electron microscope?**

- (a) Electron beams
- (b) Magnetic fields
- (c) Light waves
- (d) Both a and b

**Options :**

12820640867. A

12820640868. B

12820640869. C

12820640870. D

Question Number : 24 Question Id : 12820610338 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Any hypothesis which is tested for the purpose of rejection under the assumption that it is true, is called:**

- (a) Null hypothesis
- (b) Alternative hypothesis
- (c) Statistical hypothesis
- (d) Composite hypothesis

**Options :**

12820640871. A

12820640872. B

12820640873. C

12820640874. D

Question Number : 25 Question Id : 12820610339 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**The degree of freedom for paired t-test based on n pairs of observations is:**

- (a)  $2n - 1$
- (b)  $n - 2$
- (c)  $2(n - 1)$
- (d)  $n - 1$

**Options :**

12820640875. A

12820640876. B

12820640877. C

12820640878. D

PART B (Stream I)

**Section Id :**

128206291

**Section Number :**

2

**Section type :**

Online

**Mandatory or Optional:**

Optional

Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	128206470
Question Shuffling Allowed :	Yes

Question Number : 26 Question Id : 12820610340 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following relations is correct for Heisenberg uncertainty principle?

- (a)  $\Delta E \Delta t \geq \hbar/2$
- (b)  $\Delta x \Delta p \geq \hbar/2$
- (c)  $\Delta L \Delta \Theta \geq \hbar/2$
- (d) All of these

Options :

12820640879. A

12820640880. B

12820640881. C

12820640882. D

Question Number : 27 Question Id : 12820610341 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The divergence of curl of a vector is always

- (a) 1
- (b) 1/2
- (c) zero
- (d)  $\pi/2$

Options :

12820640883. A

12820640884. B

12820640885. C

12820640886. D

Question Number : 28 Question Id : 12820610342 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The entire information of a system can be gathered with the help of

- (a) Wave function
- (b) Position
- (c) Momentum operator
- (d) Eigen value

Options :

12820640887. A

12820640888. B  
12820640889. C  
12820640890. D

**Question Number : 29 Question Id : 12820610343 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The number of lattice points in the rhombohedral unit cell is

- (a) 4
- (b) 1
- (c) 2
- (d) 3

**Options :**

12820640891. A  
12820640892. B  
12820640893. C  
12820640894. D

**Question Number : 30 Question Id : 12820610344 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

There is no end-centred cubic space lattice, because

- (a) as it can be represented by the simple cubic lattice
- (b) as it can be represented by the simple orthorhombic lattice
- (c) it violates the cubic symmetry
- (d) None of these

**Options :**

12820640895. A  
12820640896. B  
12820640897. C  
12820640898. D

**Question Number : 31 Question Id : 12820610345 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

The electrical resistivity of very pure silver near 0 K is

- (a) Not measurable
- (b) Very high
- (c) Very low but measurable
- (d) Zero

**Options :**

12820640899. A  
12820640900. B  
12820640901. C  
12820640902. D

**Question Number : 32 Question Id : 12820610346 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

At 0 K, the probability of finding an electron in a metal at energy level E is unity, when

- (a)  $E < E_F$
- (b)  $E > E_F$
- (c)  $E \gg E_F$
- (d) None of these

Options :

- 12820640903. A
- 12820640904. B
- 12820640905. C
- 12820640906. D

Question Number : 33 Question Id : 12820610347 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Pure silicon at 0 K is

- (a) Insulator
- (b) Extrinsic semiconductor
- (c) Metal
- (d) None of these

Options :

- 12820640907. A
- 12820640908. B
- 12820640909. C
- 12820640910. D

Question Number : 34 Question Id : 12820610348 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Hydrogen bonds are stronger than

- (a) Metallic bonds
- (b) Van der Waals bonds
- (c) Ionic bonds
- (d) Covalent bonds

Options :

- 12820640911. A
- 12820640912. B
- 12820640913. C
- 12820640914. D

Question Number : 35 Question Id : 12820610349 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The transition from the ferromagnetic to the paramagnetic state is named after

- (a) Curie
- (b) Curie-Weiss
- (c) Neel
- (d) Debye

Options :

- 12820640915. A
- 12820640916. B
- 12820640917. C
- 12820640918. D

Question Number : 36 Question Id : 12820610350 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A plane cuts intercepts  $a$ ,  $3b$  and  $2c$  along the crystallographic axes in a crystal. The Miller indices of plane

- (a) (623)
- (b) (231)
- (c) (132)
- (d) None of these

Options :

- 12820640919. A
- 12820640920. B
- 12820640921. C
- 12820640922. D

Question Number : 37 Question Id : 12820610351 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

For a photon the energy is given by (where  $h$  is the Planck's constant and  $\nu$  is the frequency of light)

- (a)  $E = h\nu$
- (b)  $E = h^2\nu$
- (c)  $E = h\nu^2$
- (d)  $E = h/\nu$

Options :

- 12820640923. A
- 12820640924. B
- 12820640925. C
- 12820640926. D

Question Number : 38 Question Id : 12820610352 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

The temperature of a gas is the measure of

- (a) Average Potential energy of a molecule
- (b) Average ion concentration in the gas
- (c) Average Kinetic energy of a molecule
- (d) Average composition of a gas

Options :

- 12820640927. A
- 12820640928. B
- 12820640929. C
- 12820640930. D

Question Number : 39 Question Id : 12820610353 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

An electron has a definite wavelength of 0.02 Angstroms. Uncertainty in its position is (where  $h$  is the Planck's constant)

- a)  $25 h / (2 \pi)$
- b) 0
- c) Infinite
- d)  $50 h$

Options :

12820640931. A

12820640932. B

12820640933. C

12820640934. D

Question Number : 40 Question Id : 12820610354 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is correct?

- a)  $[\hat{x}, \hat{p}_y] = 0$
- b)  $[\hat{p}_y, \hat{p}_y] = i\hbar$
- c)  $[\hat{x}, \hat{p}_x] = 0$
- d)  $[\hat{x}, \hat{x}] = i\hbar$

Options :

12820640935. A

12820640936. B

12820640937. C

12820640938. D

Question Number : 41 Question Id : 12820610355 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Particle 1 and 2 are trapped in infinite and finite potential wells respectively. Which of the following is incorrect?

- a) De-Broglie wavelengths associated with particle 1 are shorter than those of 2
- b) Energy levels of 1 are higher than those of 2
- c) Particle 1 has a finite probability of being found outside the walls
- d) Particle 2 has a finite probability of being found outside the walls

Options :

12820640939. A

12820640940. B

12820640941. C

12820640942. D

Question Number : 42 Question Id : 12820610356 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is correct?

- a)  $\hat{p} \equiv -i \nabla$
- b)  $\hat{E} \equiv i \hbar \frac{\partial}{\partial t}$
- c)  $\hat{p}_x \equiv (\hbar) \frac{\partial}{\partial x}$  (1-dimensional)
- d)  $\hat{E} \equiv i \nabla$  (3-dimensional)

Options :

12820640943. A

12820640944. B

12820640945. C

12820640946. D

Question Number : 43 Question Id : 12820610357 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is not true?

- a) Heat engine with 100% efficiency is not possible
- b) Coefficient of performance of refrigerator cannot be infinite
- c) It is possible to transfer heat from a cold body to hot body with no other change in the system or its surroundings
- d) Process whose sole result is to absorb heat from a reservoir and completely convert it into work is not possible

Options :

12820640947. A

12820640948. B

12820640949. C

12820640950. D

Question Number : 44 Question Id : 12820610358 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is not a state variable of an ideal gas system?

- a) Pressure
- b) Volume
- c) Heat absorbed
- d) Temperature

Options :

12820640951. A

12820640952. B

12820640953. C

12820640954. D

Question Number : 45 Question Id : 12820610359 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is not an extensive thermodynamic variable?

- a) Internal energy
- b) Volume
- c) Temperature
- d) Mass

Options :

- 12820640955. A
- 12820640956. B
- 12820640957. C
- 12820640958. D

Question Number : 46 Question Id : 12820610360 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is not an intensive thermodynamic variable?

- a) Temperature
- b) Pressure
- c) Density
- d) Internal energy

Options :

- 12820640959. A
- 12820640960. B
- 12820640961. C
- 12820640962. D

Question Number : 47 Question Id : 12820610361 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Magnitude of electric field at the surface of bulk conductor carrying a surface charge density of  $\sigma$  is ( $\epsilon_0$  is permittivity of free space)

- a)  $\sigma/\epsilon_0$
- b)  $\sigma/(2\epsilon_0)$
- c) 0
- d) None of these

Options :

- 12820640963. A
- 12820640964. B
- 12820640965. C
- 12820640966. D

Question Number : 48 Question Id : 12820610362 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0



Magnitude of electric field at a distance  $r$  from an infinitely long and thin straight wire with a linear charge density of  $\lambda$  is ( $\epsilon_0$  is permittivity of free space)

- a)  $\lambda/(4\pi\epsilon_0 r)$
- b)  $\lambda/(4\pi\epsilon_0 r^2)$
- c)  $\lambda/(2\pi\epsilon_0 r)$
- d) none of these

Options :

- 12820640967. A
- 12820640968. B
- 12820640969. C
- 12820640970. D

Question Number : 49 Question Id : 12820610363 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

Which of the following is a linear crystal defect?

- a) Dislocation
- b) Grain boundary
- c) Stacking fault
- d) Vacancy

Options :

- 12820640971. A
- 12820640972. B
- 12820640973. C
- 12820640974. D

Question Number : 50 Question Id : 12820610364 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

A superconducting sample excludes the magnetic field until  $H_{c1}$ . Above  $H_{c1}$  the applied magnetic field is only partially excluded but the sample remains electrically superconducting. Sample is

- a) Type I superconductor
- b) Type-II superconductor
- c) Type-I as well as Type-II superconductor
- d) None of the above

Options :

- 12820640975. A
- 12820640976. B
- 12820640977. C
- 12820640978. D

PART B (Stream II)

Section Id :	128206292
Section Number :	3
Section type :	Online
Mandatory or Optional:	Optional

Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	128206471
Question Shuffling Allowed :	Yes

Question Number : 51 Question Id : 12820610365 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which of the following regarding the basic mechanism of gene expression is correct?**

- a) DNA → tRNA → protein
- b) RNA → mRNA → protein
- c) RNA → DNA → mRNA → protein
- d) DNA → protein

Options :

12820640979. A

12820640980. B

12820640981. C

12820640982. D

Question Number : 52 Question Id : 12820610366 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**A group of ribosome which are attached to mRNA by small ribosome unit is known as**

- a) Polyribosome
- b) Polysome
- c) Monosome
- d) Oligosome

Options :

12820640983. A

12820640984. B

12820640985. C

12820640986. D

Question Number : 53 Question Id : 12820610367 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which one of the following Vitamins is essential for coagulation of Blood?**

- (a) K
- (b) C
- (c) A
- (d) B1

Options :

- 12820640987. A
- 12820640988. B
- 12820640989. C
- 12820640990. D

Question Number : 54 Question Id : 12820610368 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Engulfing of bacteria by white blood cells is called as**

- a) Phagocytosis
- b) Pinocytosis
- c) Exocytosis
- d) Endocytosis

Options :

- 12820640991. A
- 12820640992. B
- 12820640993. C
- 12820640994. D

Question Number : 55 Question Id : 12820610369 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which of the following does not take part in gene expression?**

- a) Replication
- b) Transcription
- c) RNA processing
- d) Translation

Options :

- 12820640995. A
- 12820640996. B
- 12820640997. C
- 12820640998. D

Question Number : 56 Question Id : 12820610370 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Isoelectric point of a protein is the pH at which net charge on the molecule is**

- a) One
- b) Zero
- c) Positive
- d) Negative

Options :

- 12820640999. A
- 12820641000. B
- 12820641001. C
- 12820641002. D

Question Number : 57 Question Id : 12820610371 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**DNA molecules absorb maximum light at the wavelength of**

- a) 280 nm
- b) 360 nm
- c) 260 nm
- d) 220 nm

Options :

12820641003. A

12820641004. B

12820641005. C

12820641006. D

Question Number : 58 Question Id : 12820610372 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Number of chromosomes in Down's syndrome is**

- a) 46
- b) 47
- c) 48
- d) 49

Options :

12820641007. A

12820641008. B

12820641009. C

12820641010. D

Question Number : 59 Question Id : 12820610373 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Lysosomes which eat parts of their own cell in state of starvation are called**

- a) Autophagosomes
- b) Autophagocytosis
- c) Auto retarded
- d) Auto destruction

Options :

12820641011. A

12820641012. B

12820641013. C

12820641014. D

Question Number : 60 Question Id : 12820610374 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**The gas present in the stratosphere which filters out some of the sun's ultraviolet light and provides an effective shield against radiation damage to living things is**

- a) Helium
- b) Ozone
- c) Oxygen
- d) Methane

**Options :**

12820641015. A

12820641016. B

12820641017. C

12820641018. D

**Question Number : 61 Question Id : 12820610375 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Place on chromosome where spindle fibers are attached during cell division is called**

- a) Chromatids
- b) Centromere
- c) Centrioles
- d) Mitochondria

**Options :**

12820641019. A

12820641020. B

12820641021. C

12820641022. D

**Question Number : 62 Question Id : 12820610376 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Process of replacing defective genes with effective genes is known as**

- a) Transgenic fusion
- b) Transgenic budding
- c) Transgenic injection
- d) Gene therapy

**Options :**

12820641023. A

12820641024. B

12820641025. C

12820641026. D

**Question Number : 63 Question Id : 12820610377 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**To transfer genes from one species to another, especially useful are**

- a) Vectors
- b) Plasmids
- c) Double stranded DNA molecules
- d) Both a and b

**Options :**

12820641027. A

12820641028. B

12820641029. C

12820641030. D

**Question Number : 64 Question Id : 12820610378 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following is true about DNA polymerase?**

- a) It can synthesize DNA in the 5' to 3' direction
- b) It can synthesize DNA in the 3' to 5' direction
- c) It can synthesize mRNA in the 3' to 5' direction
- d) It can synthesize mRNA in the 5' to 3' direction

**Options :**

12820641031. A

12820641032. B

12820641033. C

12820641034. D

**Question Number : 65 Question Id : 12820610379 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**All are true for enzymes but**

- a) Enzymes are biological catalysts
- b) Enzymes speed up the rate of a reaction
- c) Enzymes may change chemically during the reaction
- d) Enzymes may change physically during the reaction

**Options :**

12820641035. A

12820641036. B

12820641037. C

12820641038. D

**Question Number : 66 Question Id : 12820610380 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

### **Example of green biotechnology is**

- a) Industrial antibiotics
- b) Industrial chemicals
- c) Industrial catalysts
- d) BT corn and pesticides

**Options :**

- 12820641039. A
- 12820641040. B
- 12820641041. C
- 12820641042. D

**Question Number : 67 Question Id : 12820610381 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

### **Fitting of substrate in active site is called as**

- a) Hydrolysis
- b) Condensation
- c) Polymerization
- d) Lock and key hypothesis

**Options :**

- 12820641043. A
- 12820641044. B
- 12820641045. C
- 12820641046. D

**Question Number : 68 Question Id : 12820610382 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

### **Hormones from pituitary gland includes**

- a) Testosterone
- b) Oestrogen
- c) Progesterone
- d) All of these

**Options :**

- 12820641047. A
- 12820641048. B
- 12820641049. C
- 12820641050. D

**Question Number : 69 Question Id : 12820610383 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The fluorescent dye such Ethidium bromide is used for visualizing DNA. How does Ethidium bromide bind to DNA?**

- a) Stacked between histone molecules
- b) Binds to the nucleotide base
- c) Intercalated between the stacked bases
- d) Binds to the phosphodiester backbone

**Options :**

- 12820641051. A
- 12820641052. B
- 12820641053. C
- 12820641054. D

**Question Number : 70 Question Id : 12820610384 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**What is the unusual characteristic of cell membrane seen in apoptotic cell?**

- a) Cell membrane ruptures
- b) Cell membrane channels stop working
- c) Cell membrane exposes phosphatidylserine on the outer side
- d) Cell membrane exposes the cholesterol and lipid rafts on the outer side

**Options :**

- 12820641055. A
- 12820641056. B
- 12820641057. C
- 12820641058. D

**Question Number : 71 Question Id : 12820610385 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Time lapse between two successive generations is called**

- a) Generation time
- b) Exponential phase
- c) Population growth
- d) Growth sequence

**Options :**

- 12820641059. A
- 12820641060. B
- 12820641061. C
- 12820641062. D

**Question Number : 72 Question Id : 12820610386 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**



**The type of mutation in which purine is replaced by pyrimidine is**

- a) Transition
- b) Transversion
- c) Deletion
- d) Inversion

**Options :**

- 12820641063. A
- 12820641064. B
- 12820641065. C
- 12820641066. D

**Question Number : 73 Question Id : 12820610387 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**TATA boxes and Pribnow boxes are components of**

- a) Operators
- b) Enhancers
- c) Promoters
- d) Activators

**Options :**

- 12820641067. A
- 12820641068. B
- 12820641069. C
- 12820641070. D

**Question Number : 74 Question Id : 12820610388 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following is not true?**

- a) Cells in biofilm exhibit greater antibiotic resistance
- b) Cells in a biofilm exhibit a slower pace of metabolism and replication
- c) Bacterial population inside a biofilm reaches higher cell density than the planktonic forms
- d) Biofilms are not involved in human infections.

**Options :**

- 12820641071. A
- 12820641072. B
- 12820641073. C
- 12820641074. D

**Question Number : 75 Question Id : 12820610389 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

### Concentration gradient is said to exist when the

- a) Concentration of ions is more inside the cell and less outside the cell
- b) Concentration of ions is lesser inside the cell and more outside the cell
- c) Hypertonic solution enters the cells
- d) Water enters by osmosis

Options :

12820641075. A

12820641076. B

12820641077. C

12820641078. D

### PART B (Stream III)

Section Id :	128206293
Section Number :	4
Section type :	Online
Mandatory or Optional:	Optional
Number of Questions:	25
Number of Questions to be attempted:	25
Section Marks:	50
Display Number Panel:	Yes
Group All Questions:	No

Sub-Section Number:	1
Sub-Section Id:	128206472
Question Shuffling Allowed :	Yes

Question Number : 76 Question Id : 12820610390 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

### Which of the following statements is true?

- a)  $\text{H}_3\text{PO}_3$  is a stronger acid than  $\text{H}_2\text{SO}_3$
- b) In aqueous medium HF is a stronger acid than HCl
- c)  $\text{HClO}_4$  is a weaker acid than  $\text{HClO}_3$
- d)  $\text{HNO}_3$  is a stronger acid than  $\text{HNO}_2$

Options :

12820641079. A

12820641080. B

12820641081. C

12820641082. D

Question Number : 77 Question Id : 12820610391 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**The pyrimidine bases present in DNA are**

- a) Cytosine and adenine
- b) Cytosine and guanine
- c) Cytosine and thymine
- d) Cytosine and uracil

Options :

12820641083. A

12820641084. B

12820641085. C

12820641086. D

Question Number : 78 Question Id : 12820610392 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**$\alpha$ -D-(+)-glucose and  $\beta$ -D-(+)-glucose are**

- a) Conformers
- b) Epimers
- c) Anomers
- d) Enantiomers

Options :

12820641087. A

12820641088. B

12820641089. C

12820641090. D

Question Number : 79 Question Id : 12820610393 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**HBr reacts with  $\text{CH}_2 = \text{CH} - \text{OCH}_3$  under anhydrous conditions at room temperature to give**

- a)  $\text{CH}_3\text{CHO}$  and  $\text{CH}_3\text{Br}$
- b)  $\text{BrCH}_2\text{CHO}$  and  $\text{CH}_3\text{OH}$
- c)  $\text{BrCH}_2 - \text{CH}_2 - \text{OCH}_3$
- d)  $\text{H}_3\text{C} - \text{CHBr} - \text{OCH}_3$

Options :

12820641091. A

12820641092. B

12820641093. C

12820641094. D

Question Number : 80 Question Id : 12820610394 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Following statements regarding the periodic trends of chemical reactivity of the alkali metals and the halogens are given. Which of these statements gives the correct picture?**

- a) The reactivity decreases in the alkali metals but increases in the halogens with increase in atomic number down the group
- b) In both the alkali metals and the halogens the chemical reactivity decreases with increase in atomic number down the group
- c) Chemical reactivity increases with increase in atomic number down the group in both the alkali metals and halogens
- d) In alkali metals the reactivity increases but in the halogens it decreases with increase in atomic number down the group

**Options :**

12820641095. A

12820641096. B

12820641097. C

12820641098. D

**Question Number : 81 Question Id : 12820610395 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Hydrogen bomb is based on the principle of**

- a) Nuclear fission
- b) Natural radioactivity
- c) Nuclear fusion
- d) Artificial radioactivity

**Options :**

12820641099. A

12820641100. B

12820641101. C

12820641102. D

**Question Number : 82 Question Id : 12820610396 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Due to the presence of an unpaired electron, free radicals are:**

- a) Chemically reactive
- b) Chemically inactive
- c) Cations
- d) None of these

**Options :**

12820641103. A

12820641104. B

12820641105. C

12820641106. D

**Question Number : 83 Question Id : 12820610397 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The number and type of bonds between two carbon atoms in calcium carbide are**

- a) One sigma, one pi
- b) One sigma, two pi
- c) Two sigma, one pi
- d) Two sigma, two pi

**Options :**

12820641107. A

12820641108. B

12820641109. C

12820641110. D

Question Number : 84 Question Id : 12820610398 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Tertiary alkyl halides are practically inert to substitution by SN2 mechanism because of**

- a) Insolubility
- b) Instability
- c) Inductive effect
- d) Steric hindrance

**Options :**

12820641111. A

12820641112. B

12820641113. C

12820641114. D

Question Number : 85 Question Id : 12820610399 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Among the following acids which has the lowest pKa value?**

- a)  $\text{CH}_3\text{COOH}$
- b)  $\text{HCOOH}$
- c)  $(\text{CH}_3)_2\text{COOH}$
- d)  $\text{CH}_3\text{CH}_2\text{COOH}$

**Options :**

12820641115. A

12820641116. B

12820641117. C

12820641118. D

Question Number : 86 Question Id : 12820610400 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Which types of isomerism is shown by 2,3-dichlorobutane?**

- a) Diastereo
- b) Optical
- c) Geometric
- d) Structural

**Options :**

12820641119. A

12820641120. B

12820641121. C

12820641122. D

Question Number : 87 Question Id : 12820610401 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Equimolar solutions in the same solvent have**

- a) Same boiling point but different freezing point
- b) Same freezing point but different boiling point
- c) Same boiling and same freezing points
- d) Different boiling and different freezing points

**Options :**

12820641123. A

12820641124. B

12820641125. C

12820641126. D

Question Number : 88 Question Id : 12820610402 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**Biogas is produced by the anaerobic digestion or fermentation of bio-degradable materials such as biomass, manure, sewage, municipal waste, green waste, plant material and crops. Biogas comprises primarily of**

- a) Ethane
- b) Methane
- c) Butane
- d) Octane

**Options :**

12820641127. A

12820641128. B

12820641129. C

12820641130. D

Question Number : 89 Question Id : 12820610403 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical

Correct Marks : 2 Wrong Marks : 0

**The cell in which electrical energy is converted to chemical energy is:**

- a) Galvanic cell
- b) Voltaic cell
- c) Electrolytic cell
- d) Electrochemical cell

**Options :**

12820641131. A

12820641132. B

12820641133. C

12820641134. D

**Question Number : 90 Question Id : 12820610404 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Fuel cell is an electrochemical device that converts the chemical energy into the \_\_\_\_\_.**

- a) Electrical energy
- b) Mechanical energy
- c) Static energy
- d) Frictional energy

**Options :**

12820641135. A

12820641136. B

12820641137. C

12820641138. D

**Question Number : 91 Question Id : 12820610405 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Splitting of spectral lines because of electric effect is known as**

- a) Zeeman effect
- b) Electromagnetic effect
- c) Stark effect
- d) Molecular effect

**Options :**

12820641139. A

12820641140. B

12820641141. C

12820641142. D

**Question Number : 92 Question Id : 12820610406 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**The Nernst equation is given by which of the following statements?**

- a)  $E = E_o + 2.303 RT/F \log CH$
- b)  $E = E_o - 2.303 RT/F \log CH$
- c)  $E = E_o + 2.303 RT \times F \log CH$
- d)  $E = E_o - 2.303 RT \times F \log CH$

**Options :**

- 12820641143. A
- 12820641144. B
- 12820641145. C
- 12820641146. D

**Question Number : 93 Question Id : 12820610407 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Which of the following acids has the lowest  $pK_a$  value?**

- a) Acetic acid
- b) Sulphuric acid
- c) Dil. HCl
- d) Oxalic acid

**Options :**

- 12820641147. A
- 12820641148. B
- 12820641149. C
- 12820641150. D

**Question Number : 94 Question Id : 12820610408 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**For a reversible process,**

- a)  $dS = dQ/T$
- b)  $dS > dQ/T$
- c)  $dS < dQ/T$
- d) none of the mentioned

**Options :**

- 12820641151. A
- 12820641152. B
- 12820641153. C
- 12820641154. D

**Question Number : 95 Question Id : 12820610409 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**



**Aqueous solution of the detergents are**

- a) Neutral
- b) Acidic
- c) Basic
- d) Amphoteric

**Options :**

12820641155. A

12820641156. B

12820641157. C

12820641158. D

**Question Number : 96 Question Id : 12820610410 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**System of reaction in which no reactant leaves reaction mixture, is termed as**

- a) Open system
- b) Closed system
- c) Semi-open system
- d) Partially closed system

**Options :**

12820641159. A

12820641160. B

12820641161. C

12820641162. D

**Question Number : 97 Question Id : 12820610411 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Pairs of outer shell electrons not used in bonding are called as**

- a) Valence electrons
- b) Loner electrons
- c) Electrovalent electrons
- d) Lone pairs

**Options :**

12820641163. A

12820641164. B

12820641165. C

12820641166. D

**Question Number : 98 Question Id : 12820610412 Question Type : MCQ Option Shuffling : No Display Question Number : Yes  
Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Mobile phase in chromatography can be**

- a) Gas or liquid
- b) Solid or liquid
- c) Only solid
- d) Only gas

**Options :**

12820641167. A

12820641168. B

12820641169. C

12820641170. D

**Question Number : 99 Question Id : 12820610413 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**In an unsaturated solution, concentration of each ion of sparingly soluble salt at 298 K, tells us the**

- a) solubility product
- b) solubility reactant
- c) dynamic equilibrium
- d) solubility equilibrium

**Options :**

12820641171. A

12820641172. B

12820641173. C

12820641174. D

**Question Number : 100 Question Id : 12820610414 Question Type : MCQ Option Shuffling : No Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical**

**Correct Marks : 2 Wrong Marks : 0**

**Electrons should be filled in energy sub shells in order of increasing energy values, is principle of**

- a) Aufbau
- b) Pauli's exclusion
- c) Hund's
- d) None of these

**Options :**

12820641175. A

12820641176. B

12820641177. C

12820641178. D