National Testing Agency

Question Paper Name :	PGQP55 24th Sep 2021 Shift 2
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PGQP55

Group Number :	1
Group Id :	864351346
Group Maximum Duration :	0
Group Minimum Duration :	120
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	400
Is this Group for Examiner? :	No

PART A - General

Section Id :	8643511236
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory

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Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	8643511469
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 86435130330 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select the correct option :

You may feel relieved when something bad _____.

1. happens
2. does not happen
3. is remembered
4. occurs

Options :

864351105771. 1

864351105772. 2

864351105773. 3

864351105774. 4

Question Number : 2 Question Id : 86435130331 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Select the most suitable synonym :

BARBARIAN

1. impolite
2. unkind
3. uncivilized
4. unlikeness

Options :

864351105775. 1

864351105776. 2

864351105777. 3

864351105778. 4

Question Number : 3 Question Id : 86435130332 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which is the closest meaning of the phrase ***to be hard of hearing*** ?

1. deaf
2. deaf and dumb
3. careless
4. arrogant

Options :

864351105779. 1

864351105780. 2

864351105781. 3

864351105782. 4

Question Number : 4 Question Id : 86435130333 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Identify the meaning of the idiom from the options given :

In black and white

1. useless
2. in short
3. in writing
4. in full swing

Options :

864351105783. 1

864351105784. 2

864351105785. 3

864351105786. 4

Question Number : 5 Question Id : 86435130334 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select the most suitable antonym :

RAPTURE

1. despair
2. elation
3. ecstasy
4. hell

Options :

864351105787. 1

864351105788. 2

864351105789. 3

864351105790. 4

Question Number : 6 Question Id : 86435130335 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

Complete the second sentence by selecting the appropriate option :

One way to improve your health is to eat more fruit and vegetables.
Alternatively _____ .

1. you could fall ill
2. you could go on diet
3. you could exercise more
4. you could increase risk of your heart disease

Options :

864351105791. 1

864351105792. 2

864351105793. 3

864351105794. 4

Question Number : 7 Question Id : 86435130336 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fill in the blank with right word :

An employee might be given a privilege as a form of _____.

1. punishment
2. reward
3. increment
4. commendation

Options :

864351105795. 1

864351105796. 2

864351105797. 3

864351105798. 4

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Question Number : 8 Question Id : 86435130337 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select the correct option for use of 'the' :

1. the Delhi
2. the city of Delhi
3. the southern India
4. the long island

Options :

864351105799. 1

864351105800. 2

864351105801. 3

864351105802. 4

Question Number : 9 Question Id : 86435130338 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fill in the blank with correct preposition :

I am worried _____ exam.

1. on
2. in
3. about
4. of

Options :

864351105803. 1

864351105804. 2

864351105805. 3

864351105806. 4

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Question Number : 10 Question Id : 86435130339 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify the meaning of the idiom from the options given :

Hit the road

1. end the journey
2. an accident
3. begin the journey
4. happy times

Options :

864351105807. 1

864351105808. 2

864351105809. 3

864351105810. 4

Question Number : 11 Question Id : 86435130340 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What will come in place of the question mark (?) in the expression?

$4003 \times 77 - 21015 = ? \times 116$

1. 2467
2. 2476
3. 2477
4. 2478

Options :

864351105811. 1

864351105812. 2

864351105813. 3

864351105814. 4

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Question Number : 12 Question Id : 86435130341 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R :

Assertion A : For making statues, we are using bronze.

Reason R : Through the mixing of copper and tin, we produce bronze.

In the light of the above statements, choose the ***most appropriate answer*** from the options given below.

1. Both **A** and **R** are correct and **R** is the correct explanation of **A**
2. Both **A** and **R** are correct but **R** is NOT the correct explanation of **A**
3. **A** is correct but **R** is not correct
4. **A** is not correct but **R** is correct

Options :

864351105815. 1

864351105816. 2

864351105817. 3

864351105818. 4

Question Number : 13 Question Id : 86435130342 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The sum of five numbers is 260. The average of the first two numbers is 30 and the average of the last two numbers is 70. What is the third number?

1. 40
2. 50
3. 55
4. 60

Options :

864351105819. 1

864351105820. 2

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864351105821. 3

864351105822. 4

Question Number : 14 Question Id : 86435130343 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Thirty-six workers can finish a piece of work in 14 days. If the work is to be completed in 8 days, how many extra workers are required?

1. 20
2. 23
3. 27
4. 29

Options :

864351105823. 1

864351105824. 2

864351105825. 3

864351105826. 4

Question Number : 15 Question Id : 86435130344 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What should come in the blank space in the following number series?

0, 2, _____, 18, 32, 50

1. 5
2. 6
3. 7
4. 8

Options :

864351105827. 1

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864351105828. 2

864351105829. 3

864351105830. 4

Question Number : 16 Question Id : 86435130345 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Three of the following four are alike in certain way based on the English alphabetical series and so form a group. Which is the one that does not belong to that group?

1. WXST
2. HCDE
3. QRMN
4. IJEF

Options :

864351105831. 1

864351105832. 2

864351105833. 3

864351105834. 4

Question Number : 17 Question Id : 86435130346 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If every alternate Saturdays and all Sundays are holidays in a 30 days month beginning on Saturday, then how many working days are there in that month?

1. 21
2. 22
3. 23
4. 24

Options :

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864351105835. 1

864351105836. 2

864351105837. 3

864351105838. 4

Question Number : 18 Question Id : 86435130347 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Pointing to a woman in the photograph, Neetu said, "Her son's father is the son-in-law of my mother". How is Neetu related to the woman?

1. Mother
2. Sister
3. Aunt
4. Mother-in-law

Options :

864351105839. 1

864351105840. 2

864351105841. 3

864351105842. 4

Question Number : 19 Question Id : 86435130348 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Suneeta travelled 5 km towards east direction. She turned right and went for 3 km. Then she turned west and travelled for 1 km. How far is she from the starting point?

1. 3 km
2. 5 km
3. 9 km
4. 10 km

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Options :

864351105843. 1

864351105844. 2

864351105845. 3

864351105846. 4

Question Number : 20 Question Id : 86435130349 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a certain code, TEMPORAL is written as OLDSMBSP. How is CONSIDER written in that code?

1. RMNBSFEJ
2. BNMRSFEJ
3. RMNBJEFS
4. TOPDQDCH

Options :

864351105847. 1

864351105848. 2

864351105849. 3

864351105850. 4

Question Number : 21 Question Id : 86435130350 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Whose creations are *Harshacharita and Kadambari*?

1. Kalhana
2. Panini
3. Banabhatta
4. Patanjali

Options :

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864351105851. 1

864351105852. 2

864351105853. 3

864351105854. 4

Question Number : 22 Question Id : 86435130351 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Present-day Istanbul in Turkey was earlier known as

1. Ankara
2. Ottoman
3. Constantinople
4. Byzantine

Options :

864351105855. 1

864351105856. 2

864351105857. 3

864351105858. 4

Question Number : 23 Question Id : 86435130352 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Space X is

1. an Indian autogiant
2. a movie on space
3. name of a spy agency
4. an American private space company

Options :

864351105859. 1

864351105860. 2

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864351105861. 3

864351105862. 4

Question Number : 24 Question Id : 86435130353 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

UN day is celebrated on

1. 26th November
2. 24th November
3. 26th October
4. 24th October

Options :

864351105863. 1

864351105864. 2

864351105865. 3

864351105866. 4

Question Number : 25 Question Id : 86435130354 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The famous novel, *Middlemarch* was written by

1. George Eliot
2. William Wordsworth
3. William Shakespeare
4. Ruskin Bond

Options :

864351105867. 1

864351105868. 2

864351105869. 3

864351105870. 4

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PART B - MATERIALS SCIENCE AND TECHNOLOGY

Section Id :	8643511237
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	8643511470
Question Shuffling Allowed :	Yes

Question Number : 26 Question Id : 86435130355 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Density of states function implies

1. number of available energy levels of electrons in unit volume per unit temperature

2. number of available energy levels of electrons in unit volume

3. number of available energy levels of electrons in unit volume per unit energy interval

4. number of available electrons per unit volume of the solid

Options :

864351105871. 1

864351105872. 2

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864351105873. 3

864351105874. 4

Question Number : 27 Question Id : 86435130356 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Under the influence of external electric or magnetic field, when an electron moves inside a solid, what happens to its mass?

1. The mass of electron is a constant quantity and it remains constant.

2. The mass of electron increases due to absorption of external energy.

3. The mass of electron increases or decreases depending on the potential of positive ions.

4. The external field will only change the resistance, but mass of electron is not affected.

Options :

864351105875. 1

864351105876. 2

864351105877. 3

864351105878. 4

Question Number : 28 Question Id : 86435130357 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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If the doping concentration of acceptor ions increases, what is the effect on Fermi energy of P-type semiconductor?

1. Fermi level decreases but always remain above the energy level of valence band

2. Fermi level decreases increase and goes down the energy level of valence band

3. Fermi level decreases and merge into energy level of valence band

4. Fermi level is unbalanced and fluctuates rapidly

Options :

864351105879. 1

864351105880. 2

864351105881. 3

864351105882. 4

Question Number : 29 Question Id : 86435130358 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A Plasma assisted CVD process

1. is made at lower temperature than a CVD process

2. is made at higher temperature than a CVD process

3. is based on the sputtering of a target

4. is based on the decomposition of gaseous precursors thanks to wafer heating

Options :

864351105883. 1

864351105884. 2

864351105885. 3

864351105886. 4

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Question Number : 30 Question Id : 86435130359 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A material with one dimension in nano range and the other two dimensions are large is called _____.

1. Micro-material
2. Quantum wire
3. Quantum well
4. Quantum dot

Options :

864351105887. 1

864351105888. 2

864351105889. 3

864351105890. 4

Question Number : 31 Question Id : 86435130360 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The melting point of particles in nano form _____.

1. increases
2. decreases
3. remains same
4. increases then decreases

Options :

864351105891. 1

864351105892. 2

864351105893. 3

864351105894. 4

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Question Number : 32 Question Id : 86435130361 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The main purpose of CNTs in fuel cells is _____.

1. production of energy
2. active medium
3. catalyst
4. storage

Options :

864351105895. 1

864351105896. 2

864351105897. 3

864351105898. 4

Question Number : 33 Question Id : 86435130362 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Quantum dots can be used in _____.

1. Crystallography
2. Optoelectronics
3. Mechanics
4. Quantum physics

Options :

864351105899. 1

864351105900. 2

864351105901. 3

864351105902. 4

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Question Number : 34 Question Id : 86435130363 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Quantum confinement results in _____.

1. energy gap in semiconductor is proportional to the inverse of the square root of the size
2. energy gap in semiconductor is proportional to the inverse of the size
3. energy gap in semiconductor is proportional to the square of the size
4. energy gap in semiconductor is proportional to the inverse of the square of the size

Options :

864351105903. 1

864351105904. 2

864351105905. 3

864351105906. 4

Question Number : 35 Question Id : 86435130364 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is an example of Bottom-Up approach?

1. Attrition
2. Colloidal dispersion
3. Milling
4. Etching

Options :

864351105907. 1

864351105908. 2

864351105909. 3

864351105910. 4

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Question Number : 36 Question Id : 86435130365 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is an example of top-down approach for the preparation of nanomaterials?

1. Gas phase agglomeration
2. Molecular self-assembly
3. Mechanical grinding
4. Molecular beam epitaxy

Options :

864351105911. 1

864351105912. 2

864351105913. 3

864351105914. 4

Question Number : 37 Question Id : 86435130366 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which gas serves as buffer gas in laser ablation?

1. Nitrogen
2. Oxygen
3. Helium
4. Neon

Options :

864351105915. 1

864351105916. 2

864351105917. 3

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864351105918. 4

Question Number : 38 Question Id : 86435130367 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Typical precursors used in sol-gel are _____.

1. metal oxides
2. metal dioxides
3. metal alkoxides
4. metal fluorides

Options :

864351105919. 1

864351105920. 2

864351105921. 3

864351105922. 4

Question Number : 39 Question Id : 86435130368 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

HyFn stands for _____.

1. Hydrated Fluorine
2. Hydrolysed Fluorine
3. Hydrolysed Fullerene
4. Hydrated Fullerene

Options :

864351105923. 1

864351105924. 2

864351105925. 3

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864351105926. 4

Question Number : 40 Question Id : 86435130369 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which property of nanoparticles provides a driving force for diffusion?

1. Optical Properties
2. High surface area to volume ratio
3. Sintering
4. There is no such property

Options :

864351105927. 1

864351105928. 2

864351105929. 3

864351105930. 4

Question Number : 41 Question Id : 86435130370 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What happens to the Fermi energy level if a forward bias is applied to a PN junction diode?

1. Fermi energy level decreases for N-type while increases for P-type
2. Fermi energy level increases for N-type while decreases for P-type
3. Fermi energy levels remains in equilibrium in both regions to allow current to flow
4. Fermi energy levels increases for both the regions

Options :

864351105931. 1

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864351105932. 2

864351105933. 3

864351105934. 4

Question Number : 42 Question Id : 86435130371 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following statements correctly describes a **metal** within band theory?

1. A material possessing moderate band gap
2. A material possesses a large band gap
3. A material with zero band gap
4. A material with infinite band gap

Options :

864351105935. 1

864351105936. 2

864351105937. 3

864351105938. 4

Question Number : 43 Question Id : 86435130372 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which is the correct ordering of the band gaps energy?

1. Diamond > silicon > copper
2. Diamond < silicon < copper
3. Diamond < silicon > copper
4. Diamond > silicon < copper

Options :

864351105939. 1

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864351105940. 2

864351105941. 3

864351105942. 4

Question Number : 44 Question Id : 86435130373 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The shape of E-K diagram of the conduction band and valance band is

1. horizontal
2. vertical
3. parabolic
4. circular

Options :

864351105943. 1

864351105944. 2

864351105945. 3

864351105946. 4

Question Number : 45 Question Id : 86435130374 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The thermal equilibrium concentration of the electrons in the conduction band and the holes in the valence band depends upon

1. Effective density of states
2. Fermi energy level
3. Both 1 and 2
4. Neither 1 nor 2

Options :

864351105947. 1

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864351105948. 2

864351105949. 3

864351105950. 4

Question Number : 46 Question Id : 86435130375 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which statement is correct regarding the influence of temperature on conductivity?

1. Conductivity of metals increases with increase in temperature.
2. Conductivity of metals decreases with increase in temperature.
3. Conductivity of semiconductors decreases with increase in temperature.
4. Conductivity of semiconductors do not change with increase in temperature.

Options :

864351105951. 1

864351105952. 2

864351105953. 3

864351105954. 4

Question Number : 47 Question Id : 86435130376 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

All good conductors have high

1. resistance
2. electrical conductivity
3. electrical and thermal conductivity
4. conductance

Options :

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864351105955. 1

864351105956. 2

864351105957. 3

864351105958. 4

Question Number : 48 Question Id : 86435130377 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

On both ends of the CNTs, which carbon nanostructure is placed?

1. Graphite
2. Diamond
3. C_{60}
4. Benzene

Options :

864351105959. 1

864351105960. 2

864351105961. 3

864351105962. 4

Question Number : 49 Question Id : 86435130378 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

To decrease the resistivity of a semiconductor, we can

1. increase the carrier density
2. decrease the mobility
3. increase the electric field
4. increase the cross-sectional area of the resistor

Options :

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864351105963. 1

864351105964. 2

864351105965. 3

864351105966. 4

Question Number : 50 Question Id : 86435130379 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Velocity, mobility, and electric field are related by $v = \mu E$. What are the units of mobility?

1. cm/s
2. cm^2/s
3. cm^2-V/s
4. $cm^2/(V\text{-}s)$

Options :

864351105967. 1

864351105968. 2

864351105969. 3

864351105970. 4

Question Number : 51 Question Id : 86435130380 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

At high temperatures, the mobility decreases because

1. lattice vibrations scatter the electrons
2. the intrinsic carrier concentration increases
3. the semiconductor crystal begins to melt
4. the Einstein relation begins to break down

Options :

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864351105971. 1

864351105972. 2

864351105973. 3

864351105974. 4

Question Number : 52 Question Id : 86435130381 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What is the effect of impurity on metals?

1. Impurity increases into increase of mobility of electrons

2. Impurity results into more scattering of electrons and conductivity decreases

3. Impurity results into more scattering of electrons and conductivity increases

4. Impurity does not affect the conductivity

Options :

864351105975. 1

864351105976. 2

864351105977. 3

864351105978. 4

Question Number : 53 Question Id : 86435130382 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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The process that gives the better conformality is

1. PVD
2. CVD
3. PECVD
4. ALD

Options :

864351105979. 1

864351105980. 2

864351105981. 3

864351105982. 4

Question Number : 54 Question Id : 86435130383 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fermi level for extrinsic semiconductor depends on

1. donor element
2. impurity concentration
3. temperature
4. All of these

Options :

864351105983. 1

864351105984. 2

864351105985. 3

864351105986. 4

Question Number : 55 Question Id : 86435130384 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

The free electron gas theory explains conduction in

1. metals only
2. semiconductors only
3. insulators only
4. All of these

Options :

864351105987. 1

864351105988. 2

864351105989. 3

864351105990. 4

Question Number : 56 Question Id : 86435130385 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fermi-Dirac statistics cannot be applied to _____.

1. Electrons
2. Photons
3. Fermions
4. Protons

Options :

864351105991. 1

864351105992. 2

864351105993. 3

864351105994. 4

Question Number : 57 Question Id : 86435130386 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

For all the quantum states with energy greater than Fermi energy to be empty in a Fermi-Dirac system, the temperature should be _____.

1. 273 K
2. 373 K
3. 0 K
4. 100 K

Options :

864351105995. 1

864351105996. 2

864351105997. 3

864351105998. 4

Question Number : 58 Question Id : 86435130387 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Drude-Lorentz theory is

1. Classical free electron theory
2. Quantum free electron theory
3. Band theory
4. None of these

Options :

864351105999. 1

864351106000. 2

864351106001. 3

864351106002. 4

Question Number : 59 Question Id : 86435130388 Question Type : MCQ Option Shuffling : No

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Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Wiedemann-Franz law correlates

1. electrical and thermal conductivities
2. electron arrangement in shells
3. temperature and photo electric emission
4. All of these

Options :

864351106003. 1

864351106004. 2

864351106005. 3

864351106006. 4

Question Number : 60 Question Id : 86435130389 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

For a semiconductor-based light source, it should be a

1. direct bandgap semiconductor
2. indirect bandgap semiconductor
3. either direct bandgap or indirect bandgap
4. The semiconductor cannot be used as a light source

Options :

864351106007. 1

864351106008. 2

864351106009. 3

864351106010. 4

Question Number : 61 Question Id : 86435130390 Question Type : MCQ Option Shuffling : No

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Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The free electron theory could not explain which of the following properties?

1. Electrical and thermal conductivity of metals
2. Electrical and thermal conductivity of non-metal
3. Ferromagnetism
4. Ohm's law

Options :

864351106011. 1

864351106012. 2

864351106013. 3

864351106014. 4

Question Number : 62 Question Id : 86435130391 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

When light incidents on semiconductors, what is the effect on its conductivity?

1. Conductivity almost remains constant with little heating
2. Conductivity is not affected
3. Conductivity increases as electrons are promoted to conduction band after absorbing light
4. Conductivity decreases as electrons absorb photons and move with more random motion

Options :

864351106015. 1

864351106016. 2

864351106017. 3

864351106018. 4

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Question Number : 63 Question Id : 86435130392 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for coordination number of closest packed crystal structure?

1. 16
2. 12
3. 8
4. 4

Options :

864351106019. 1

864351106020. 2

864351106021. 3

864351106022. 4

Question Number : 64 Question Id : 86435130393 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following Miller indices is correct for Octahedral plane in cubic crystal?

1. (100)
2. (110)
3. (111)
4. None of these

Options :

864351106023. 1

864351106024. 2

864351106025. 3

864351106026. 4

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Question Number : 65 Question Id : 86435130394 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the molecular structures is correct for SF_6?

1. Linear
2. Tetrahedral
3. Hexagonal
4. Octahedral

Options :

864351106027. 1

864351106028. 2

864351106029. 3

864351106030. 4

Question Number : 66 Question Id : 86435130395 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Hydrogen bonding reduces the quality of water molecules to

1. repel
2. attract
3. compactly arrange
4. slide over each other

Options :

864351106031. 1

864351106032. 2

864351106033. 3

864351106034. 4

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Question Number : 67 Question Id : 86435130396 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct if the ionic radius of cation is smaller and more efficient in polarizing?

1. Carbonate ion
2. Carbonate molecule
3. Hydrogen ion
4. Water

Options :

864351106035. 1

864351106036. 2

864351106037. 3

864351106038. 4

Question Number : 68 Question Id : 86435130397 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

in Ethane C_2H_4, the C—C form a

1. σ bond
2. π bond
3. Covalent bond
4. Electro-covalent bond

Options :

864351106039. 1

864351106040. 2

864351106041. 3

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864351106042. 4

Question Number : 69 Question Id : 86435130398 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for lattice energy?

1. Endothermic
2. Exothermic
3. Ectothermic
4. Hypothermic

Options :

864351106043. 1

864351106044. 2

864351106045. 3

864351106046. 4

Question Number : 70 Question Id : 86435130399 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct when ions of opposite charges come together to form a crystal lattice?

1. Bond energy
2. Crystal energy
3. Lattice energy
4. None of these

Options :

864351106047. 1

864351106048. 2

864351106049. 3

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864351106050. 4

Question Number : 71 Question Id : 86435130400 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following pair has sp^2 hybridization of the central molecule?

1. NH_3 and NO_2^-
2. BF_3 and NH_2^-
3. BF_3 and NO_2^-
4. NH_2^- and H_2O

Options :

864351106051. 1

864351106052. 2

864351106053. 3

864351106054. 4

Question Number : 72 Question Id : 86435130401 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is correct to calculate the type of enthalpy cycle?

1. Hess' law
2. Born-Haber cycle
3. Haber process
4. Contact process

Options :

864351106055. 1

864351106056. 2

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864351106057. 3

864351106058. 4

Question Number : 73 Question Id : 86435130402 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The types of hybrid orbitals of nitrogen in NO_2^+, NO_3^- and NH_4^+ respectively are expected to be

1. sp, sp^3 and sp^2
2. sp, sp^2 and sp^3
3. sp^2, sp and sp^3
4. sp^2, sp^3 and sp

Options :

864351106059. 1

864351106060. 2

864351106061. 3

864351106062. 4

Question Number : 74 Question Id : 86435130403 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following has both covalent and ionic bonds?

1. NaOH
2. KCl
3. CH_4
4. SO_2

Options :

864351106063. 1

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864351106064. 2

864351106065. 3

864351106066. 4

Question Number : 75 Question Id : 86435130404 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following has an HCP crystal structure?

1. W
2. Mo
3. Cr
4. Zr

Options :

864351106067. 1

864351106068. 2

864351106069. 3

864351106070. 4

Question Number : 76 Question Id : 86435130405 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct atomic radius of a BCC crystal structure?

1. a/2
2. a/4
3. $a\sqrt{2}/4$
4. $a\sqrt{3}/4$

Options :

864351106071. 1

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864351106072. 2

864351106073. 3

864351106074. 4

Question Number : 77 Question Id : 86435130406 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is not a characteristic of a crystalline solid?

1. Definite and characteristic heat of fusion
2. Isotropic nature
3. A regular periodically repeated pattern of arrangement of constituent particles in the entire crystal
4. A true solid

Options :

864351106075. 1

864351106076. 2

864351106077. 3

864351106078. 4

Question Number : 78 Question Id : 86435130407 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for cations are present in the interstitial sites?

1. Frenkel defect
2. Schottky defect
3. Vacancy defect
4. Metal deficiency defect

Options :

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864351106079. 1

864351106080. 2

864351106081. 3

864351106082. 4

Question Number : 79 Question Id : 86435130408 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following statements is not true?

1. Paramagnetic substances are weakly attracted by the magnetic field.
2. Ferromagnetic substances cannot be magnetised permanently.
3. The domains in antiferromagnetic substances are oppositely oriented with respect to each other.
4. The pairing of electrons cancels their magnetic moment in the diamagnetic substances.

Options :

864351106083. 1

864351106084. 2

864351106085. 3

864351106086. 4

Question Number : 80 Question Id : 86435130409 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following pairs are isomorphous?

1. $FeSO_4.7H_2O$ and $CuSO_4.5H_2O$
2. $FeSO_4.7H_2O$ and $Mn.4H_2O$
3. $FeSO_4.7H_2O$ and $ZnSO_4.7H_2O$
4. $CuSO_4.5H_2O$ and $MnSO_4.4H_2O$

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Options :

864351106087. 1

864351106088. 2

864351106089. 3

864351106090. 4

Question Number : 81 Question Id : 86435130410 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for a crystalline solid?

1. Changes abruptly from solid to liquid when heated
2. Has no definite melting point
3. Undergoes deformation of its geometry easily
4. Has an irregular 3-dimensional arrangements

Options :

864351106091. 1

864351106092. 2

864351106093. 3

864351106094. 4

Question Number : 82 Question Id : 86435130411 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is an example of ionic crystal solid?

1. Diamond
2. LiF
3. Li
4. Silicon

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Options :

864351106095. 1

864351106096. 2

864351106097. 3

864351106098. 4

Question Number : 83 Question Id : 86435130412 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Impurity defect is termed as point defect. It can occur _____.

1. in one way, as substitution impurity defect
2. in one way, as interstitial impurity defect
3. in two ways, as substitution impurity defect or as interstitial impurity defect
4. in two ways, as vacant impurity defect or as interstitial impurity defect

Options :

864351106099. 1

864351106100. 2

864351106101. 3

864351106102. 4

Question Number : 84 Question Id : 86435130413 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

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Schottky defects are observed in solids with cations and anions of similar sizes. Which of the following compounds don't have a Schottky defect?

1. NaCl
2. AgCl
3. CsCl
4. KCl

Options :

864351106103. 1

864351106104. 2

864351106105. 3

864351106106. 4

Question Number : 85 Question Id : 86435130414 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is not the feature of solute and solvent atoms that determine the degree to which former dissolve in latter?

1. Valences
2. Atomic size factor
3. Crystal structure
4. Corrosion factor

Options :

864351106107. 1

864351106108. 2

864351106109. 3

864351106110. 4

Question Number : 86 Question Id : 86435130415 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

Foreign species is present in defects. Which one of the following is correct?

1. Interstitial
2. Vacancy
3. Substitution
4. All of these

Options :

864351106111. 1

864351106112. 2

864351106113. 3

864351106114. 4

Question Number : 87 Question Id : 86435130416 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following compounds shows both Schottky and frenkel defect?

1. Silver(I) iodide
2. Silver(I) bromide
3. Magnesium sulphide
4. Titanium oxide

Options :

864351106115. 1

864351106116. 2

864351106117. 3

864351106118. 4

Question Number : 88 Question Id : 86435130417 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

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Correct Marks : 4 Wrong Marks : 1

X-ray diffraction patterns are used for studying crystal structure of solids because

1. they have very high energy, hence they can penetrate through solids
2. they are electromagnetic radiation, and hence do not interact with matter (crystals)
3. their wavelengths are comparable to inter-atomic distances
4. their high frequency enables rapid analysis

Options :

864351106119. 1

864351106120. 2

864351106121. 3

864351106122. 4

Question Number : 89 Question Id : 86435130418 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If X-ray of wavelength 100 Å is incident on an atom at an angle of 90°, then what should be the value of *d* for first-order spectrum?

1. 30 Å
2. 40 Å
3. 50 Å
4. 60 Å

Options :

864351106123. 1

864351106124. 2

864351106125. 3

864351106126. 4

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Question Number : 90 Question Id : 86435130419 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The Miller indices *h*, *k*, and *l* of parallel planes in a BCC lattice should satisfy which of the following X-ray diffraction reflection rules?

1. *h*+*k*+*l* should be even
2. *h*, *k*, and *l* should all be either even or odd
3. *m*, *h*, *k* and *l* should form Pythagoras triplet
4. all plane allows reflection

Options :

864351106127. 1

864351106128. 2

864351106129. 3

864351106130. 4

Question Number : 91 Question Id : 86435130420 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following bond lengths is present in the diamond?

1. 234 pm
2. 154 pm
3. 890 pm
4. 600 pm

Options :

864351106131. 1

864351106132. 2

864351106133. 3

864351106134. 4

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Question Number : 92 Question Id : 86435130421 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A thermodynamic process where no heat is exchanged with the surroundings is

1. isothermal
2. adiabatic
3. isobaric
4. isotropic

Options :

864351106135. 1

864351106136. 2

864351106137. 3

864351106138. 4

Question Number : 93 Question Id : 86435130422 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A perfect black body should have a unique characteristic feature as per the following :

1. A good absorber only
2. A good radiator
3. A good absorber and a good radiator
4. Neither a radiator nor an absorber

Options :

864351106139. 1

864351106140. 2

864351106141. 3

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864351106142. 4

Question Number : 94 Question Id : 86435130423 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct?

1. Diamagnetism is temperature dependent
2. Paramagnetism is temperature dependent
3. Paramagnetism is temperature independent
4. None of the above

Options :

864351106143. 1

864351106144. 2

864351106145. 3

864351106146. 4

Question Number : 95 Question Id : 86435130424 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is correct for making materials suitable for electromagnets?

1. High retentivity and high coercivity
2. Low retentivity and low coercivity
3. High retentivity and low coercivity
4. Low retentivity and high coercivity

Options :

864351106147. 1

864351106148. 2

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864351106149. 3

864351106150. 4

Question Number : 96 Question Id : 86435130425 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following properties is possessed by ferromagnetic substances?

1. Hysteresis
2. Susceptibility
3. Directional property
4. Attracting magnetic substances

Options :

864351106151. 1

864351106152. 2

864351106153. 3

864351106154. 4

Question Number : 97 Question Id : 86435130426 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In order to minimise hysteresis loss, the magnetic material should have

1. high resistivity
2. low hysteresis co-efficient
3. large B—H loop area
4. high retentivity

Options :

864351106155. 1

864351106156. 2

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864351106157. 3

864351106158. 4

Question Number : 98 Question Id : 86435130427 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a wire, if both the length and radius are doubled, then how does the modulus of elasticity change?

1. Doubled
2. Halved
3. Becomes one fourth
4. Remains unchanged

Options :

864351106159. 1

864351106160. 2

864351106161. 3

864351106162. 4

Question Number : 99 Question Id : 86435130428 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A paramagnetic material had a magnetic field intensity of 10^4 A/m. If the susceptibility of the material at room temperature is 3.7×10^{-3}, calculate the flux density in the material.

1. 37A/m
2. 3.7A/m
3. 370A/m
4. 0

Options :

864351106163. 1

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864351106164. 2

864351106165. 3

864351106166. 4

Question Number : 100 Question Id : 86435130429 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The earth's magnetic field at the equator is approximately 0.4 G. What is the earth's dipole moment?

1. 0.8×10^{23} Am^2
2. 1.0×10^{23} Am^2
3. 1.2×10^{23} Am^2
4. 1.5×10^{23} Am^2

Options :

864351106167. 1

864351106168. 2

864351106169. 3

864351106170. 4

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