Q1. When momentum is equal to kinetic energy, the velocity will be:

a) Infinity
b) Unity
c) Zero
d)2m/s

Explanation:

Momentum p = m v
Kinetic Energy KE = 1/2 m v2
If p = KE, then
m v = 1/2 m v2
=> v = 2 m/s

Book Reference:

Physics (Part-I)
Chapter 3: Motion and Force
Topic: Momentum & Kinetic Energy Relationship

Additional Expected MCQs from this Topic

The SI unit of momentum is:
a) Joule
b) kg·m/s
c) Newton
d) Watt

If momentum of a body is doubled, its kinetic energy becomes:
a) Same
b) Double
c) Four times
d) Half

Which of the following is a vector quantity?
a) Kinetic Energy
b) Momentum
c) Work
d) Potential Energy

A body of mass 2 kg is moving with velocity 5 m/s. Its momentum is:

a) 10 kg·m/s

b) 7 kg·m/s

c) 15 J

d) 5 N

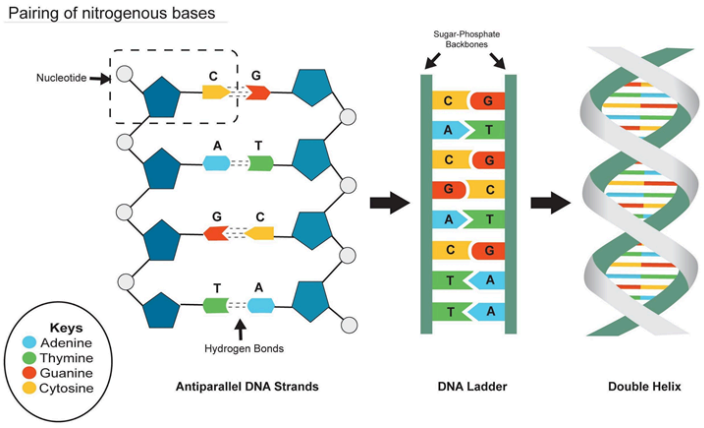
Q2. In DNA, the number of adenine molecules is always equal to the number of:

a) Guanine

b) Thymine

c) Cytosine

d) Uracil



Book Reference:

Biology (Part-I)

Chapter 2: Biological Molecules

Topic: Structure of DNA (Chargaff's Rule)

Additional Expected MCQs from this Topic

In DNA, guanine pairs with:
a) Cytosine
b) Adenine
c) Thymine
d) Uracil

The base-pairing rule in DNA was discovered by:
a) Watson and Crick
b) Erwin Chargaff
c) Franklin
d) Mendel

Which of the following is a purine base?
a) Adenine
b) Cytosine
c) Thymine

In RNA, thymine is replaced by:
a) Adenine
b) Guanine
c) Uracil
d) Cytosine

The sugar present in DNA is:
a) Ribose
b) Deoxyribose
c) Fructose
d) Glucose

Q3. The limiting Lyman series lies in the:

a) Visible region
b) Infrared region

c) Ultraviolet region
d) X-ray region

Series	Electron Transition (to n=)	Region of Spectrum
Lyman	n = 1	Ultraviolet
Balmer	n = 2	Visible
Paschen	n = 3	Infrared
Brackett	n = 4	Infrared
Pfund	n = 5	Infrared
Humphrey	n = 6	Infrared

Book Reference:

Physics (Part-II)
Chapter 18: Atomic Spectra
Topic: Hydrogen Spectrum – Lyman Series

Additional Expected MCQs from this Topic

The Lyman series in hydrogen spectrum is produced when electrons fall to:
a) n = 1
b) n = 2
c) n = 3
d) n = 4

The Balmer series of hydrogen lies in the:
a) Infrared region
b) Visible region
c) Ultraviolet region
d) Microwave region

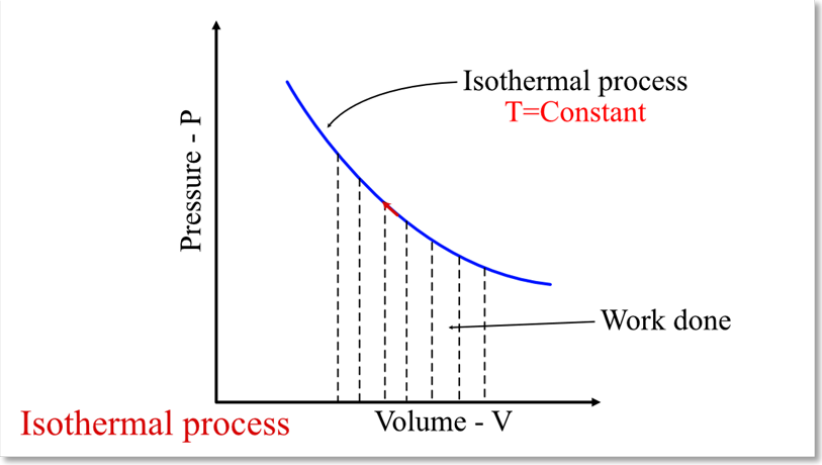
The Paschen series of hydrogen lies in the:
a) Infrared region
b) Visible region
c) Ultraviolet region
d) X-ray region

Which spectral series of hydrogen falls in the visible range?
a) Lyman
b) Balmer
c) Paschen
d) Brackett

The energy of photons in the Lyman series is:
a) Lowest
b) Highest
c) Equal to Balmer series
d) Zero

Q4. The graph of Boyle's law is called:

a) Isochoric
b) Isothermal (Isotherm)
c) Adiabatic
d) Isobaric



Book Reference:

Physics (Part-I)
Chapter 8: Thermal Properties of Matter
Topic: Gas Laws – Boyle's Law

Additional Expected MCQs from this Topic

Boyle's law states that at constant temperature, the pressure of a given mass of gas is:
a) Directly proportional to volume
b) Inversely proportional to volume
c) Equal to volume
d) Independent of volume

The graph of pressure versus volume for Boyle's law is:
a) Straight line through origin
b) Hyperbola
c) Parabola
d) Circle

The product of pressure and volume of a given mass of gas at constant temperature is:
a) Zero
b) Constant
c) Maximum
d) Minimum

Boyle's law holds good only when:
a) Temperature is constant
b) Pressure is constant
c) Volume is constant
d) Both pressure and temperature vary

Q5. In bacterial photosynthesis, the gas released as a by-product is:

a) Oxygen
b) Nitrogen
c) Sulphur
d) Carbon dioxide

Explanation:

$CO_2 + 2H_2S \rightarrow (CH_2O) + H_2O + 2S$
Explanation:
In place of water (H_2O), hydrogen sulphide (H_2S) is used as the electron donor.
Instead of oxygen (O_2), sulphur (S) is released as a by-product

Book Reference:

Biology (Part-II)
Chapter 11: Bioenergetics
Topic: Photosynthesis in Bacteria

Additional Expected MCQs from this Topic

The bacteria which use hydrogen sulphide instead of water in photosynthesis are called:
a) Photoautotrophic bacteria

b) Chemosynthetic bacteria
c) Saprophytic bacteria
d) Parasitic bacteria

In green plants, the by-product of photosynthesis is:
a) Oxygen
b) Sulphur
c) Carbon dioxide
d) Methane

Photosynthesis in bacteria that do not produce oxygen is called:
a) Oxygenic photosynthesis
b) Anoxygenic photosynthesis
c) Aerobic respiration
d) Chemosynthesis

The pigment responsible for capturing light in bacterial photosynthesis is:
a) Bacteriochlorophyll
b) Chlorophyll-a
c) Xanthophyll
d) Phycocyanin

In bacterial photosynthesis, hydrogen donor is often:
a) Water
b) Hydrogen sulphide (H_2S)
c) Oxygen
d) Glucose

Q6. When water flows from top to bottom, the speed of efflux at the hole made at the bottom end of the tank is approximately:

a) 2.2 m/s
b) 3.3 m/s

c) 4.4 m/s
d) 5.5 m/s

Explanation:

Formula:
$v = \sqrt{(2\ g\ h)}$
Where:
$g = 9.8\ m/s^2$ (acceleration due to gravity)
h = height of water column above the hole

Step 1: Put values
$v = \sqrt{(2 \times 9.8 \times 1)}$

Step 2: Simplify
$v = \sqrt{(19.6)}$
Step 3: Solve
$v \approx 4.4\ m/s$

Book Reference:

Physics (Part-II)
Chapter 10: Fluid Dynamics
Topic: Torricelli's Theorem – Speed of Efflux

Additional Expected MCQs from this Topic

Torricelli's theorem is based on which principle?
a) Newton's law
b) Bernoulli's principle
c) Pascal's law
d) Boyle's law

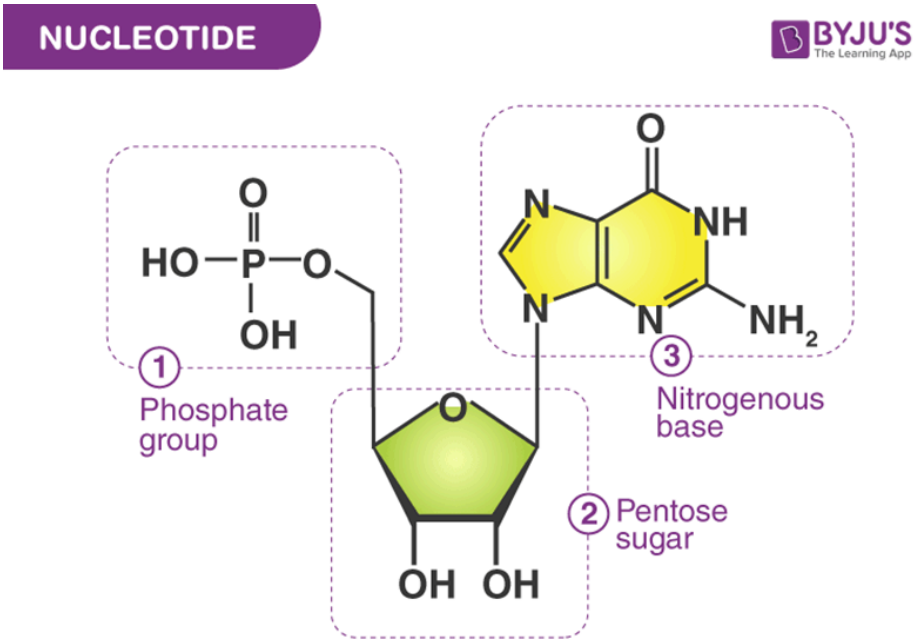
The practical application of Torricelli's theorem is seen in:

a) Flow of water from a tank
b) Boyle's law
c) Air resistance
d) Elastic collisions

The unit of speed of efflux is:
a) m/s
b) m/s^2
c) kg·m/s

Q7. Which of the following is not a nucleotide?

a) ATP
b) NAD
c) AMP
d) GTP



Book Reference:

Biology (Part-I)
Chapter 2: Biological Molecules
Topic: Nucleotides and Coenzymes

Additional Expected MCQs from this Topic

Which one is an example of a purine base?
a) Adenine
b) Thymine
c) Cytosine
d) Uracil

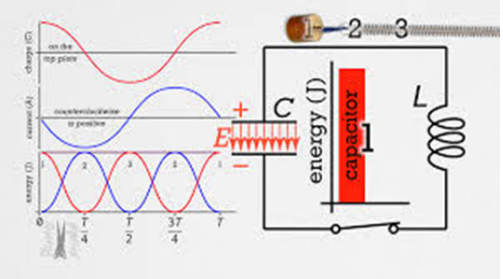
ATP is the abbreviation of:
a) Adenosine triphosphate
b) Adenine triphosphate
c) Adenine tetraphosphate
d) Adenosine tetraphosphate

Which molecule acts as a universal energy currency in cells?
a) DNA
b) RNA
c) ATP
d) NAD

In nucleotides, the sugar present is:
a) Glucose
b) Ribose or Deoxyribose
c) Fructose
d) Maltose

Q8. In an RL circuit, the voltage leads the current by:

a) 0°
b) 45°
c) 90°
d) An angle between 0° and 90°



Book Reference:

Physics (Part-II)
Chapter 15: Alternating Current
Topic: Phase Relation in RL Circuit

Additional Expected MCQs from this Topic

In a purely inductive AC circuit, the current:
a) Leads the voltage by 90°
b) Lags the voltage by 90°
c) Is in phase with voltage
d) Is independent of voltage

In a purely resistive AC circuit, the current:
a) Leads voltage
b) Lags voltage
c) Is in phase with voltage
d) Opposite in phase

The power factor of a purely inductive circuit is:
a) 0

b) 1
c) Between 0 and 1

Q9. “A gust of anger claimed her” means:

a) She became silent
b) A fit of fury attacked her
c) She became happy
d) A wave of sadness came over her

Additional Expected MCQs from this Topic

“He turned a deaf ear” means:
a) He ignored
b) He listened carefully
c) He agreed
d) He was confused

“To smell a rat” means:
a) To suspect something wrong
b) To find a mouse
c) To feel happy
d) To detect a fragrance

The synonym of “benevolent” is:
a) Kind
b) Cruel
c) Angry
d) Harsh

Q10. Consider a cup that is half filled with liquid and rotating. If it is filled to the brim, the rotation will:

a) Speed up
b) Slow down
c) Remain constant
d) Stop suddenly

Book Reference:

Chapter 6: Work and Energy
Topic: Rotational Motion – Conservation of Angular Momentum

Additional Expected MCQs from this Topic

When the moment of inertia of a rotating body increases, its angular velocity:
a) Increases
b) Decreases
c) Remains constant
d) Becomes zero

Conservation of angular momentum is applied in:
a) Spinning of an ice skater
b) Boiling of water
c) Expansion of gases
d) Law of gravitation

The SI unit of angular momentum is:
a) kg·m²/s
b) kg·m/s²
c) N·m
d) J

Which of the following quantities is conserved when no external torque acts on a system?

a) Linear momentum
b) Angular momentum
c) Kinetic energy
d) Potential energy

Q11. Louis Pasteur discovered the vaccine:

a) Tuberculosis
b) Cholera
c) Anthrax
d) Smallpox

Book Reference:

Biology (Part-II)
Chapter 20: Biotechnology
Topic: Vaccination & Microbiology Discoveries

Additional Expected MCQs from this Topic

The first vaccine ever discovered was for:
a) Rabies
b) Smallpox
c) Cholera
d) Polio

Louis Pasteur also developed a vaccine for:
a) Rabies
b) Tuberculosis
c) Influenza
d) Typhoid

The process of killing microbes in food and drinks by heat is called:
a) Pasteurization
b) Sterilization

c) Distillation
d) Fermentation

Which of the following diseases has been completely eradicated through vaccination?
a) Smallpox
b) Anthrax
c) Rabies
d) Cholera

Q12. "I am writing in pencil so I can scrub _____ my mistake."

a) Up
b) Off
c) In
d) Out

Additional Expected MCQs from this Topic

The synonym of erase is:
a) Remove
b) Add
c) Write
d) Draw

"She turned _____ the radio." (Fill in the blank)
a) Off
b) At
c) In
d) Over

The opposite of honest is:
a) Truthful
b) Dishonest
c) Sincere
d) Noble

The idiom "break the ice" means:
a) To start a conversation
b) To destroy something
c) To slip on ice
d) To fight

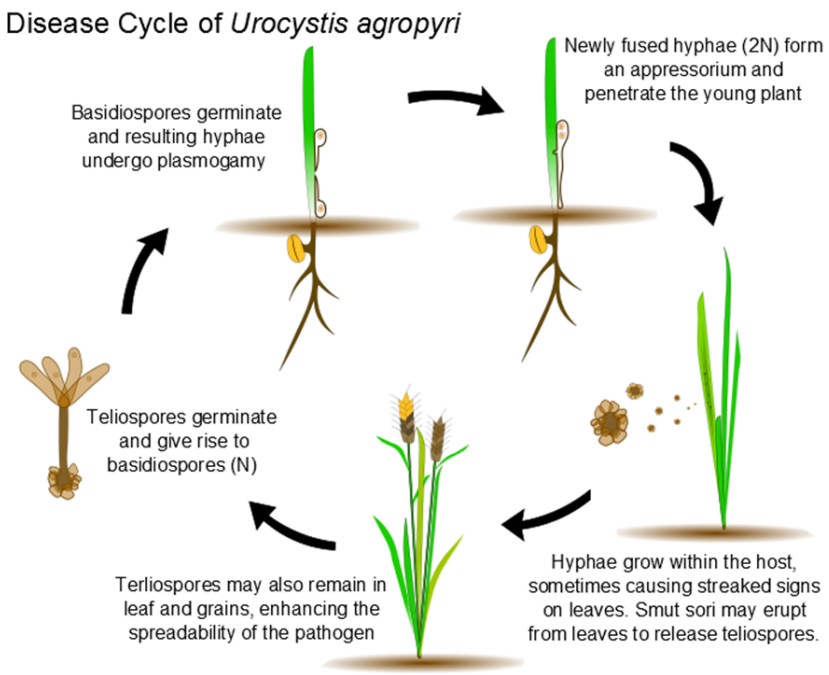
"Look after" means:
a) To take care of
b) To search for
c) To admire
d) To ignore

Q13. In the life cycle of pathogenic loose smut of wheat, the organ of the host that stores dormant mycelium is:

a) Root
b) Stem
c) Embryo
d) Endosperm

Book Reference:

Biology (Part-II)
Chapter 9: Fungi
Topic: Life Cycle of Pathogenic Fungi (Loose Smut of Wheat)



Additional Expected MCQs from this Topic

Loose smut of wheat is caused by:
a) Puccinia graminis
b) Ustilago tritici
c) Aspergillus
d) Rhizopus

Loose smut of wheat is transmitted through:
a) Soil
b) Infected seed
c) Air spores
d) Insect bite

The dormant mycelium of loose smut remains viable for:
a) Few hours
b) Several years
c) Few minutes
d) Only one season

Q14. A sinusoidal current has RMS value of 10 A. Its maximum value of current is:

a) 10 A
b) 12 A
c) 14.14 A
d) 20 A

Explanation:

Formula:
$I_o = \sqrt{2} \times I_r$
$= \sqrt{2} \times 10$
$= 14.14$ A

Book Reference:

Physics (Part-II)
Chapter 15: Alternating Current
Topic: RMS and Peak Value of AC

Additional Expected MCQs from this Topic

For an AC voltage of maximum value 220 V, the RMS value is:
a) 110 V
b) 155.6 V
c) 220 V
d) 311 V

The RMS value of a sinusoidal current is also called:
a) Average value
b) Effective value

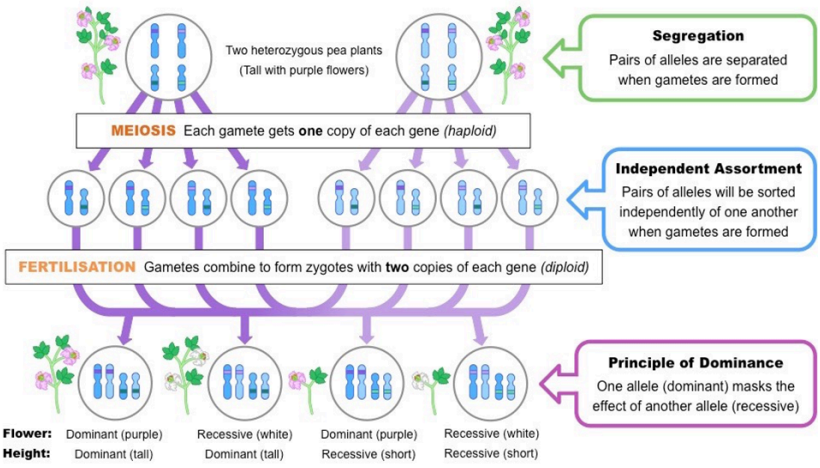
c) Peak value
d) Instantaneous value

The average value of a complete cycle of sinusoidal current is:
a) Maximum
b) Zero
c) Infinity
d) RMS

If Irms=7A, the peak current will be:
a) 7 A
b) 9.9 A
c) 14 A
d) 3.5 A

Q15. The number of different gametes formed from a genotype AaBb is:

a) 2
b) 3
c) 4
d) 8



Book Reference:

Biology (Part-II)
Chapter 17: Genetics
Topic: Law of Independent Assortment (Gamete Formation)

Additional Expected MCQs from this Topic

The number of gametes formed from Aa is:
a) 1
b) 2
c) 3
d) 4

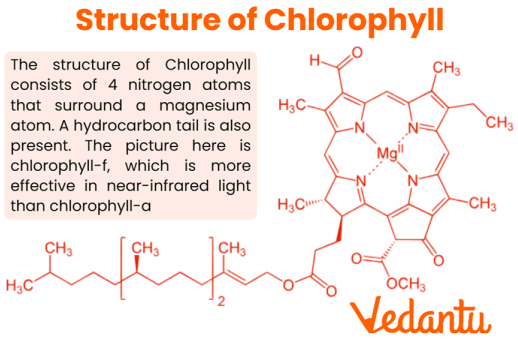
In genotype AaBbCc, the number of gametes is:
a) 4
b) 6
c) 8
d) 16

The law of independent assortment was first given by:
a) Darwin
b) Mendel
c) Watson
d) Lamarck

The number of gametes formed from genotype AaBbCcDd is:
a) 8
b) 16
c) 12
d) 4

Q16. The functional group in chlorophyll is:

a) Benzene ring with Fe^{2+}
b) Porphyrin ring with Mg^{2+}
c) Pyrimidine ring with Cu^{2+}
d) Steroid ring with Zn^{2+}



Book Reference:

Biology (Part-II)
Chapter 11: Bioenergetics
Topic: Structure of Chlorophyll

Additional Expected MCQs from this Topic

The central metal atom in chlorophyll is:
a) Iron
b) Magnesium
c) Copper
d) Zinc

Chlorophyll-a absorbs maximum light in which region?
a) Red and blue
b) Green
c) Yellow
d) Orange

The tail portion of chlorophyll is made of:
a) Porphyrin ring
b) Phytol chain

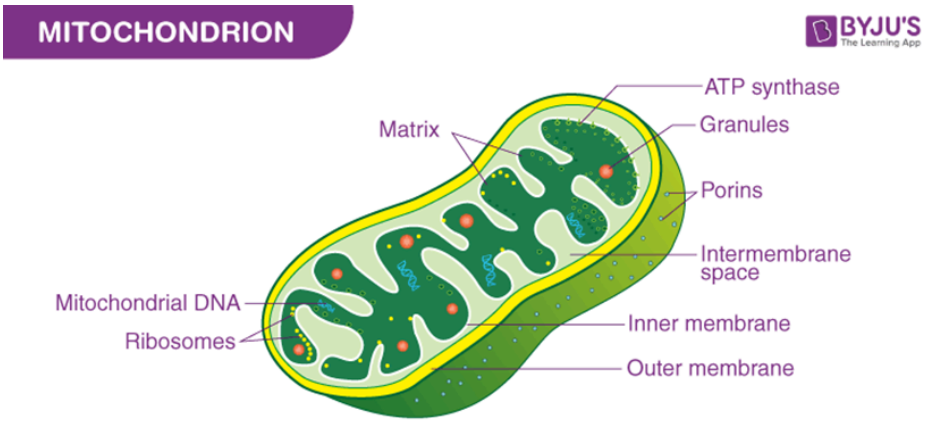
c) Polypeptide chain
d) Nucleotide chain

The pigment responsible for the green color of plants is:
a) Carotene
b) Xanthophyll
c) Chlorophyll
d) Anthocyanin

The function of magnesium in chlorophyll is to:
a) Provide green color
b) Act as a central atom binding porphyrin ring
c) Store electrons
d) Produce ATP

Q17. The process that takes place in mitochondria is:

a) Anaerobic respiration
b) Aerobic respiration
c) Photosynthesis
d) Fermentation



Book Reference:

Biology (Part-I)
Chapter 4: The Cell
Topic: Mitochondria – Powerhouse of the Cell

Additional Expected MCQs from this Topic

Mitochondria are commonly known as:
a) Kitchen of the cell
b) Powerhouse of the cell
c) Brain of the cell
d) Skeleton of the cell

The folded inner membrane of mitochondria is called:
a) Grana
b) Cristae
c) Thylakoid
d) Matrix

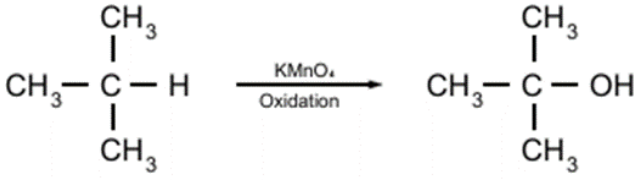
The fluid inside mitochondria is known as:
a) Stroma
b) Cytosol
c) Matrix
d) Vacuole

Which molecule is the main energy currency of the cell produced in mitochondria?
a) Glucose
b) ATP
c) DNA
d) NADPH

In mitochondria, the electron transport chain (ETC) is located in:
a) Outer membrane
b) Inner membrane
c) Matrix
d) Ribosome

Q18. Which alkane gives an aldehyde on oxidation?

a) Ethane
b) Methane
c) Propane
d) Butane



Book Reference:

Chemistry (Part-II)
Chapter 14: Hydrocarbons
Topic: Oxidation of Alkanes

Additional Expected MCQs from this Topic

The oxidation of methane produces:
a) Methanol
b) Formaldehyde
c) Acetone

The general formula of alkanes is:
a) CnH_2n
b) CnH_2n+2
c) CnH_2n-2
d) CnHn

The first member of alkane series is:
a) Ethane
b) Methane

c) Propane
d) Butane

Complete combustion of methane produces:
a) CO + H_2O
b) CO_2 + H_2O
c) CH_3OH
d) HCHO

Which alkane is also known as natural gas component?
a) Ethane
b) Methane
c) Propane
d) Butane

Q19. Esterification is a chemical reaction that occurs between:

a) Alcohol + Aldehyde
b) Alcohol + Carboxylic acid
c) Alkane + Alkene
d) Ketone + Alcohol

Book Reference:

Chemistry (Part-II)
Chapter 15: Alcohols, Phenols & Carboxylic Acids
Topic: Esterification Reaction

Additional Expected MCQs from this Topic

The product of esterification is:
a) Ether

b) Ester
c) Amide
d) Aldehyde

Esterification reaction is usually carried out in the presence of:
a) NaOH
b) H_2SO_4 (conc.)
c) HCl
d) KOH

Hydrolysis of esters gives back:
a) Alcohol + Carboxylic acid
b) Ketone + Acid
c) Aldehyde + Alcohol
d) Alkane + Acid

Esters are commonly used as:
a) Preservatives
b) Flavouring agents & perfumes
c) Fuels
d) Fertilizers

Which compound is called ethyl ethanoate?
a) CH_3COOH
b) $CH_3COOCH_2CH_3$
c) C_2H_5OH
d) CH_3CHO

Q20. Oxidation of a secondary alcohol produces:

a) Aldehyde
b) Ketone

c) Carboxylic acid
d) Ester

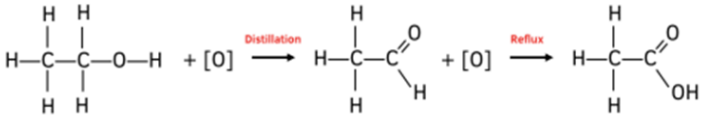


Fig 1. Oxidation of Primary Alcohols.

Book Reference:

Chemistry (Part-II)
Chapter 15: Alcohols, Phenols & Ethers
Topic: Oxidation of Alcohols

Additional Expected MCQs from this Topic

Oxidation of a primary alcohol produces first:
a) Aldehyde
b) Ketone
c) Ester
d) Ether

Oxidation of a primary alcohol on further reaction gives:
a) Carboxylic acid
b) Ketone
c) Alkane
d) Ester

Oxidation of a tertiary alcohol generally gives:
a) Carboxylic acid
b) No reaction
c) Aldehyde
d) Ketone

The reagent commonly used for oxidation of alcohols is:
a) $KMnO_4$
b) NaCl
c) H_2SO_4
d) NaOH

The functional group of ketones is:
a) –CHO
b) –COOH
c) –C=O (within chain)
d) –OH