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MCQs / Objective

Biochemistry

تمام سابقہ پیپرز کے مکمل حل شدہ سوالات وجوابات، نوٹس وغیرہ بلکل فری ڈاونلوڈ کریں۔

for

Lecturer, Assistant Professor, Biochemists, Instructor, MBBS GAT/ HAT (Subject) & other related Jobs

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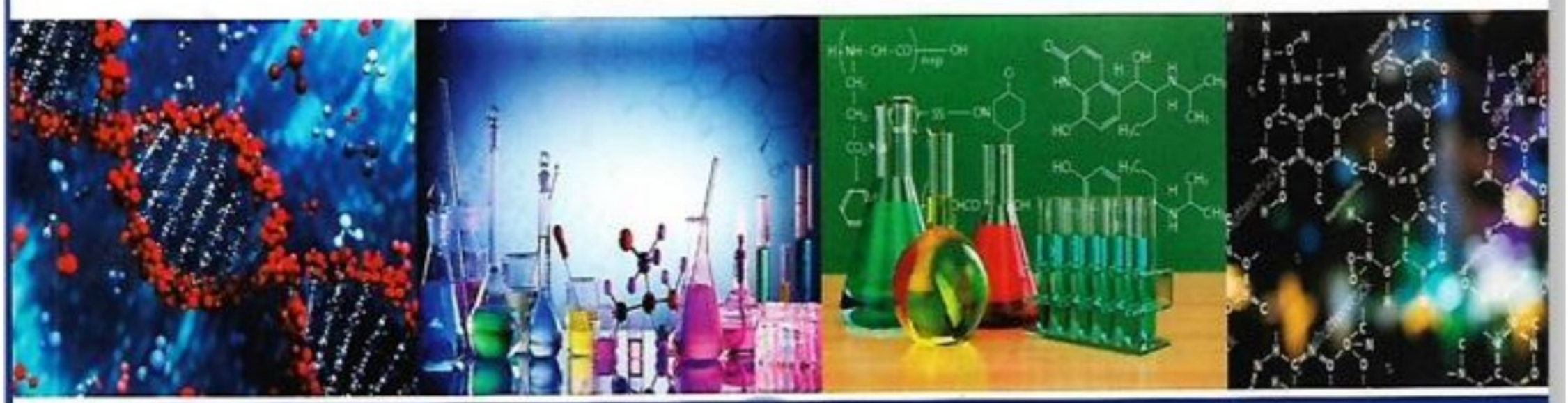

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BIOCHEMISTRY MCQS

Peroxidase enzyme contain----------?
A. Chromium
B. Selenium(Answer)
C. Magnesium
D. Calcium

Ferritin – an inactive form of iron is stored in----------?
A. Gut
B. Spleen
C. Liver(Answer)
D. All of the above

In human body which of the following trace element is next to iron----------?
A. Ca++
B. Zn++(Answer)
C. Cu++
D. Selenium

Daily requirement of iron in man is----------?
A. 1gm
B. 10 microgram
C. 10 mg(Answer)
D. 20 mg

Inside the cell, the substance, which contributes to most of the osmolality, is----------?
A. Protein
B. Potassium(Answer)
C. Urea
D. Phosphate

Normal level of serum phosphorous is----------?
A. 2.5 – 4.5 mgm%(Answer)
B. 7-9 mgm%
C. 40-50 mgm%
D. 1-2 mgm%

In all the following RNA participates directly except----------?
A. Post translation modification(Answer)

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B. Post transcriptional modification
C. DNA replication
D. Splicing

Which of the following is most important content of diet ?
A. Protein
B. Water
C. Vitamin
D.Minerals(Answer)

Enzymes increase reaction rates by----------?
A. Altering the free energy of the action
B. Inhibiting the backward reaction
C. Enhancing the forward reaction
D.Decreasing the energy of activation(Answer)

In molecular cloning, Blue White screening is used for----------?
A. To screen for recombinant vectors
B. To detect gene mutations
C. To identify desired chromosomal DNA insert in plasmid vectors(Answer)
D. To detect host DNA in situ

Non polar lipid act as----------?
A. Electrical insulators(Answer)
B. Irons
C. Non electrical insulators
D. Electrolytes

HMP shunt is of great importance in cellular metabolism because its produces----------?
A. ATP
B. ADP
C. Acetyl CoA
D.NADPH(Answer)

NADPH is generated by the action of----------?
A. Glucose 6 phosphate dehydrogenase(Answer)
B. Glucose 1 phosphate dehydrogenase
C. Glucose 1,6 diphosphate dehydrogenase
D. All of the above

Number of ATP molecules generated in the conversion of glycogen of lactate is----------?

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A. 2(Answer)
B. 36
C. 38
D. 32

The monsaccharide glucose is best described by which one of the following statements ?
A. It usually exists in the furanose form
B. It is a ketose
C. It possessesan anomeric C-2 carbon atom
D.It formspart of the disaccharide sucrose(Answer)

Fructose intolerance is to----------?
A. Fructose only
B. Fructose and glucose
C. Sucrose only
D.Fructose and sucrose(Answer)

Dietary fibre is rich in----------?
A. Starch
B. Cellulose(Answer)
C. Collagen
D. Inulin

Type II glycogen storage disorder is due to deficiency of----------?
A. Alpha -Glucosidase(Answer)
B. Alpha galactosidase
C. Muscle phosphorylase
D. Acid Lipase

Most lipogenic----------?
A. Fructose(Answer)
B. Glucose
C. Galactose
D. Ribose

Insulin increase the following pathways in liver EXCEPT----------?
A. Fatty acid synthesis
B. Glycogen synthesis
C. Protein syntehsis
D.Glucose synthesis(Answer)

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Branch of biology which deals with the study of chemical components and chemical processes in living organisms is called----------? Biology

A. Molecular biology
B. Physiology
C. Biochemistry(Answer)
D. Atomic biology

Given MCQs have Four Options One is Correct all Answers of Questions Are Given below

1. Which of the following is amino acid has indole ring in its side chain
   A. Phenyl alanine
   B. Tyrosine
   C. Histidine
   D. tryptophan

2. Amino acids with hydroxyl OH group include
   A. serine
   B. threonine
   C. tyrosine
   D. all of these

3. Which of the following amino acid has amide group in its side chain
   A. Cysteine
   B. lysine
   C. glutamine
   D. isoleucine

4. Aspartamine, an artificial sweetener is made of
   A. Aspartate and glutamate
   B. Asparagine and Glutamate
   C. Aspartate and phenylalanine
   D. Aspartate and glycine

5. Which of the following amino acids are considered as semi-essential amino acids
   A. Asparagine and histidine
   B. Tryptophan and arginine
   C. Histidine and arginine
   D. Histidine, arginine and tryptophan

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6. D-amino acids occur naturally in small amounts in
   A. Bacterial peptidoglycan cell wall
   B. Fungal chitinous cell wall
   C. Cellulosic plant cell wall
   D. All of these

7. Which of the following is an imino acid
   A. glycine
   B. Proline
   C. lysine
   D. histidine

8. Tryptophan is the precursor of plant hormone
   A. auxin
   B. cytokinin
   C. kinetin
   D. gibberellin

9. Ornithine and citrulline for urea synthesis are derivatives of
   A. cysteine
   B. arginine
   C. Histidine
   D. methionine

10. Which of the following is considered as the 21st amino acid
   A. hydroxylysine
   B. Ornithine
   C. citrulline
   D. selenocysteine

Above 10 MCQs Questions Correct Answers is Given Below

1. tryptophan
2. all of these
3. glutamine
4. Aspartate and phenylalanine
5. Histidine and arginine
6. Bacterial peptidoglycan cell wall
7. Proline

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8. auxin
9. arginine
10. selenocysteine

---

1. An enzyme is
   A. lipid
   B. cabrohydrates
   C. protein
   D. nucleic acid

2. An enzyme promotes a chemical reaction by
   A. lowering the energy of activation
   B. increasing the energy of activation
   C. changing the free energy
   D. None Of These

3. The function of an enzyme is to
   A. change the directions of reactions
   B. control the equilibrium
   C. change the rates of chemical reactions
   D. All of these

4. The word enzyme was coined by
   A. Kunhe
   B. Koshland
   C. Louis Pasteur
   D. Fischer

5. First enzyme to be isolated in pure crystalline form was
   A. Zymase
   B. Oxygenase
   C. Hexokinase
   D. Urease

6. Which of the following have no enzymes of their own ?
   A. Bacteria
   B. Cynobacteria
   C. Viruses

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D. All of these

7. Proteinaceous nature of enzymes are discovered by
   A. Kunhe
   B. Koshland
   C. Buchner
   D. Sumner

8. Which of the following enzyme is not proteinaceous in nature
   A. Urease
   B. Peptidiase
   C. Ribozyme
   D. Phosphatase

9. Which of the enzyme has lowest turn over number?
   A. PEP Carboxylase
   B. Phosphorylase
   C. Lysozyme
   D. Carbonic anhydrase

10. Which of the enzyme has lowest turn over number?
   A. Lysozyme
   B. Carbonic anhydrase
   C. PEP Carboxylase
   D. Phosphorylase

Above 10 MCQs Questions Correct Answers is Given Below

1. protein
2. lowering the energy of activation
3. change the rates of chemical reactions
4. Kunhe
5. Urease
6. Viruses
7. Sumner
8. Ribozyme
9. Lysozyme
10. Carbonic anhydrase

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1. The sugar in RNA is
   A. deoxyribose
   B. fructose
   C. glucose
   D. ribose

2. The building blocks of RNA is called
   A. amino acids
   B. monomers
   C. nucleosides
   D. nucleotides

3. DNA and RNA are
   A. carbohydrates
   B. nucleic acids
   C. Both a and b
   D. lipids

4. RNA is found in
   A. nucleolus
   B. cytoplasm
   C. mitochondria
   D. all of these

5. A ribonucleotide consists of
   A. ribose sugar, phosphate and amino acids
   B. glucose, phosphate and aminoacids
   C. ribose sugar, phosphate and nitrogenous base
   D. sugar, phosphate and lipids

6. Which of the following statement is incorrect regarding RNA
   A. RNA is single stranded
   B. RNA is the only genetic material in viruses
   C. RNA is the genetic material in some viruses
   D. all of these

7. The bonds involved in RNA
   A. Hydrogen bonds
   B. Phosphodiester bonds
   C. Both a and b

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D. None Of These

8. The nitrogenous bases in RNA include
   A. Adenine, guanine, cytosine and thymine
   B. Adenine, guanine, cytosine and uracil
   C. Adenine, cytosine and thymine
   D. depends on the environment

9. In RNA, pyramidines are
   A. Adenine and guanine
   B. Thymine and uracil
   C. Adenine and uracil
   D. cytosine and uracil

10. Which of the following statement is incorrect
   A. cytosine and thymine are the only pyrimidines
   B. pyrimidines are one ringed structures
   C. purines are two ringed structures
   D. cytosine, thymine and uracil are pyramidines

Above 10 MCQs Questions Correct Answers is Given Below

1. ribose
2. nucleotides
3. nucleic acids
4. all of these
5. ribose sugar, phosphate and nitrogenous base
6. RNA is the only genetic material in viruses
7. Phosphodiester bonds
8. Adenine, guanine, cytosine and uracil
9. cytosine and uracil
10. cytosine and thymine are the only pyrimidines

---

1. A nucleoside is
   A. A nucleotide without sugar

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B. A nucleotide without phosphate
C. A nucleotide without nitrogenous base
D. A nucleotide without sugar only

2. The adjacent nucleotides are joined by
A. Ionic bond
B. Hydrogen bond
C. Phosphodiester bond
D. All of these

3. According to Chargaff's rule, in a DNA molecule
A. The amount of Adenine and thymine= The amount of guanine and cytosine
B. The amount of cytosine and Guanine= The amount of adenine and cytosine
C. The amount of Adenine and Guanine= The amount of thymine and cytosine
D. All of these

4. Watson and Cricks double helical DNA is a
A. A-DNA
B. B-DNA
C. Z-DNA
D. D-DNA

5. The two strands in a DNA double helix are joined by
A. Hydrogen bonds between sugars
B. Phosphodiester bonds between sugars
C. Hydrogen bonds between bases
D. Phosphodiester bonds between sugars

6. Who all got the Nobel prize for discovering the structure of DNA double helix
A. Watson and Crick
B. Watson, Crick and Wilkins
C. Watson, Crick and Franklin
D. Watson, Crick and Pauling

7. The diameter of DNA helix is
A. 10 Angstrong
B. 21 Angstrong
C. 1nm
D. 2 nm

8. The distance between two adjacent nucleotide is

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A. 6.8 Angstrong
B. 3.4 Angstrong
C. 1.7 Angstrong
D. 10 Angstrong

9. DNA is
A. Positively charged
B. Negatively charged
C. neutral
D. None Of These

10. Which of the following statement is true
A. The two DNA strands are parallel and complementary
B. The two DNA strands are anti parallel and non-complementary
C. The two DNA strands are anti-parallel and complementary
D. None Of These

Above 10 MCQs Questions Correct Answers is Given Below

1. A nucleotide without phosphate
2. Phosphodiester bond
3. The amount of Adenine and Guanine= The amount of thymine and cytosine
4. B-DNA
5. Hydrogen bonds between bases
6. Watson, Crick and Wilkins
7. 2 nm
8. 3.4 Angstrong
9. Negatively charged
10. The two DNA strands are anti-parallel and complementary

---

1. The sugar in DNA is
A. ribose
B. deoxyribose
C. fructose
D. glucose

2. The building blocks of DNA is called

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A. aminoacids
B. nucleosides
C. monomers
D. nucleotides

3. DNA and RNA are
A. carbohydrates
B. nucleic acids
C. Both a and b
D. lipids

4. Which of the following is the genetic material
A. RNA
B. DNA
C. both a and b
D. RNA, DNA and proteins

5. A nucleotide consists of
A. Sugar, phosphate and amino acids
B. glucose, phosphate and aminoacids
C. sugar, phosphate and nitrogenous base
D. sugar, phosphate and lipids

6. Which of the following statement is incorrect regarding DNA
A. DNA is the genetic material in all organisms
B. DNA is the only genetic material in viruses
C. DNA is the only genetic material in bacterium
D. all of these

7. Purines are
A. single ringed structures
B. two ringed structures
C. three ringed structures
D. multi ringed structures

8. According to Watson and Crick DNA model, DNA is a
A. depends on the environment
B. single stranded structure
C. double helix
D. triple helix

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9. Purines include
   A. Adenine and guanine
   B. Thymine and cytosine
   C. Adenine and thymine
   D. cytosine and guanine

10. Which of the following is incorrect regarding pyrimidines
   A. cytosine and thymine are the pyrimidines
   B. pyrimidines are one ringed structures
   C. pyrimidines are two ringed structures
   D. pyramidines always bond with purines

Above 10 MCQs Questions Correct Answers is Given Below

1. deoxyribose
2. nucleotides
3. nucleic acids
4. both a and b
5. sugar, phosphate and nitrogenous base
6. DNA is the only genetic material in viruses
7. two ringed structures
8. double helix
9. Adenine and guanine
10. pyrimidines are two ringed structures

---

1. If the percentage of adenine in a DNA sample is 20%. What would be the percentage of other bases?
   A. T=30%,G=20%,C=30%
   B. T=40%,G=20%,C=20%
   C. T=20%,G=30%,C=30%
   D. T=20%,G=20%,C=40%

2. Which of the following statement is incorrect
   A. DNA is the only biomolecule with self repair mechanism
   B. DNA is autocatalytic
   C. DNA is heterocatalytic
   D. Increasing temperature to 90-100 degree breaks phosphodiester bonds in DNA

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3. . In a DNA sample, the percentage on bases is G=30% and C=40%. The most probable explanation is
   A. Mutation might have occurred
   B. The DNA sample may be a bacterial genome
   C. The DNA sample may be a viral genome
   D. None Of These

4. Which of the following statement is true?
   A. DNA bases varies from one species to another
   B. DNA bases of a species does not change with age nutritional state and environment
   C. DNA base remains same in different tissues of the same individual
   D. All of these

5. The negative charge of DNA is due to
   A. Sugar, phosphate and amino acids
   B. Deoxy ribose sugar
   C. Nitrogenous bases specifically adenine
   D. Phosphate group

6. The amount of DNA in a cell can be altered by
   A. Ecological factors
   B. Environmental factors
   C. Physiological factors
   D. Cannot be altered

7. The amount of DNA of a cell at the beginning of mitosis is
   A. Half of the amount found in cells at G1 stage
   B. Same as the amount found in cells at G1 stage
   C. twice the amount found in cells at G1 stage
   D. four times the amount found at G1 stage

8. The DNA found in all living organisms is
   A. Left handed DNA
   B. Right handed DNA
   C. Both a and b
   D. Z-DNA

9. The DNA strand is directly involved in the formation of all except
   A. protein
   B. another DNA strand
   C. mRNA molecule
   D. tRNA molecule

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10. Which of the following statement is wrong
    A. A-DNA is the dehydrated form of DNA
    B. The naturally occurring DNA is B-DNA and is also called as wet DNA
    C. Z DNA is also called zig-zag DNA and is a right handed helix
    D. Z-DNA occurs in dehydrated high salt concentration

Above 10 MCQs Questions Correct Answers is Given Below

1. T=20%,G=30%,C=30%
2. Increasing temperature to 90-100 degree breaks phosphodiester bonds in DNA
3. The DNA sample may be a viral genome
4. All of these
5. Phosphate group
6. Cannot be altered
7. twice the amount found in cells at G1 stage
8. Right handed DNA
9. protein
10. Z DNA is also called zig-zag DNA and is a right handed helix

---

1. A fat molecule consists of
    A. fatty acid and glycerol
    B. glycerol and protein
    C. fatty acid and protein
    D. glycerol and carbohydrate

2. Which of the following is not a lipid?
    A. glycerol
    B. lecithin
    C. wax
    D. sterol

3. Which of the following is rich in linoleic acid?
    A. soyabean oil
    B. linseed oil
    C. grount nut oil

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D. sunflower oil

4. Example of a monosaturated fatty acid is?
   A. palmitic acid
   B. arachidonic acid
   C. oleic acid
   D. linolenic acid

5. Which of the following is most unsaturated?
   A. Coconut oil
   B. Mustard oil
   C. Dalda
   D. All are equally unsaturated

6. Waxes belong to ---- group
   A. lipid
   B. amino acid
   C. monosaccharide
   D. oligosaccharide

7. Phospholipids are important cell membrane constituents because they
   A. contain gllycerol
   B. can form bilayers in water
   C. contain both polar and non polar portion
   D. combine covalently with proteins

8. All the following statements describing lipids are true except
   A. they are usually associated by covalent interactions
   B. they are poorly soluble in water
   C. they are intracellular energy source
   D. they are structural components of membranes

9. Maximum number of double bonds in an unsaturated fatty acid is/ are
   A. 4
   B. 3
   C. 2
   D. 1

10. Which of the following is a Phospholipid?
   A. Oleic acid
   B. Glycogen

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C. Prostaglandin
D. Sphingomyelin

Above 10 MCQs Questions Correct Answers is Given Below

1. fatty acid and glycerol
2. glycerol
3. sunflower oil
4. oleic acid
5. Mustard oil
6. lipid
7. contain both polar and non polar portion
8. they are usually associated by covalent interactions
9. 4
10. Sphingomyelin

---

1. Carbohydrates are organic compounds made up of
   A. Carbon and hydrogen
   B. Carbon, hydrogen and oxygen
   C. Carbon, hydrogen, oxygen and nitrogen
   D. Carbon and oxygen

2. The most common monomer of carbohydrate is
   A. nucleotides
   B. glucose
   C. amino acids
   D. maltose

3. Monosaccharides are
   A. aldoses
   B. ketoses
   C. both a and b
   D. None Of These

4. The minimum number of carbon in a monosaccharide is
   A. 1
   B. 2

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C. 3
D. 4

5. All the following are monosaccharides except
   A. Glucose
   B. Fructose
   C. maltose
   D. galactose

6. Two monosaccharides are joined by
   A. Peptide bond
   B. Phosphodiester bond
   C. Glycosidic bond
   D. Hydrogen bond

7. All the following are reducing sugars except
   A. Glucose
   B. Maltose
   C. sucrose
   D. lactose

8. Sucrose is a disaccharide made up of
   A. Glucose and fructose
   B. Glucose and lactose
   C. Glucose and glucose
   D. Glucose and galactose

9. All the following are storage polysaccharides except
   A. starch
   B. cellulose
   C. glycogen
   D. dextran

10. Carbohydrates occur naturally in
   A. D-form
   B. L-form
   C. Both a and b
   D. None Of These

Above 10 MCQs Questions Correct Answers is Given Below

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1. Carbon, hydrogen and oxygen
2. glucose
3. both a and b
4. 3
5. maltose
6. Glycosidic bond
7. sucrose
8. Glucose and fructose
9. cellulose
10. D-form

---

1. A lipid is formed by the condensation reactions between
   A. Carbon and hydrogen
   B. Fatty acids and alcohol
   C. Fatty acids and amino acids
   D. Fatty acids and amines

2. Which of the following statement is wrong regarding lipids
   A. Lipids are insoluble in water
   B. Lipids are insoluble in ethanol
   C. Lipids are soluble in benzene
   D. Lipids are insoluble in chloroform

3. Lipids are important constituents of
   A. nucleus
   B. ribosome
   C. both a and b
   D. biological membranes

4. Which of the following is a derived lipid
   A. Fats
   B. Oils
   C. Steroids
   D. waxes

5. Fats consists of
   A. alcohol linked by ester bonds to 3 fatty acids
   B. glycerol molecule linked by ester bonds to 3 fatty acids

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C. glycerol molecule linked by ester bonds to a fatty acid
D. glycerol molecule linked by ester bonds to 4 fatty acids

6. Compounds with carbohydrates along with fatty acids are called
A. Simple lipids
B. waxes
C. Glycolipids
D. phopholipids

7. Cardiolipin is a
A. Glycolipids
B. phopholipids
C. Simple lipids
D. None Of These

8. Cerebrosides are glycolipids that are important constituent of
A. biological membrane
B. lung
C. brain
D. bones

9. Phytosterol include
A. ergosterol
B. stigmasterol
C. both a and b
D. cholesterol

10. Which of the following is not a derivative of cholesterol
A. Steroid hormones
B. Vitamin E
C. Bile salts
D. Vitamin D

Above 10 MCQs Questions Correct Answers is Given Below

1. Fatty acids and alcohol
2. Lipids are insoluble in ethanol
3. biological membranes
4. Steroids
5. glycerol molecule linked by ester bonds to 3 fatty acids

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6. Glycolipids
7. phopholipids
8. brain
9. both a and b
10. Vitamin E

---

1. The primary structure is primarily maintained by
   A. Peptide bond
   B. Hydrogen bond
   C. Ionic bond
   D. Hydrophobic bonds

2. Which of the following statements are true regarding primary structure of proteins
   A. Primary structure denote the number of amino acids in a protein
   B. Primary structure denote the sequence of amino acids in a protein
   C. Primary structure determines the biological activity of a protein
   D. all of these

3. Which of the following amino acid is a alpha helix terminator
   A. cysteine
   B. alanine
   C. proline
   D. isoleucine

4. The secondary structure is primarily maintained by
   A. Van der waals force
   B. Hydrogen bond
   C. Ionic bond
   D. Hydrophobic bonds

5. Which of the following is the most common and stable conformation for a polypeptide chain
   A. Alpha helix
   B. Beta pleated sheets
   C. Anti parallel beta pleated sheet
   D. Tertiary structure

6. The amyloid protein deposition associated with Alzheimer's disease is composed of

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A. Alpha helix
B. Beta pleated sheets
C. Beta bends
D. Tertiary structure

7. In alpha helix, the bonding is between the
A. Adjacent amino acids
B. Carbonyl oxygen of one peptide bond to the NH group of the 4th amino acid away
C. Carbonyl oxygen of second peptide bond to the NH group of the 3rd amino acid away
D. Carbonyl oxygen of second peptide bond to the NH group of the 5th amino acid away

8. Which of the following statements are true regarding tertiary structure of proteins
A. 3 dimensional structure of a protein
B. It is the biologically active conformation
C. Primary structure of protein determines the tertiary structure
D. All of these

9. The most common amino acid in beta bend is
A. cysteine
B. glycine
C. serine
D. methionine

10. Which of the following statements are true regarding quaternary structure of proteins
A. Refers to organisation and spatial arrangements of amino acids within a polypeptide chain
B. Refers to organisation and spatial arrangements of proteins with many polypeptide chains
C. Both a and b
D. None Of These

Above 10 MCQs Questions Correct Answers is Given Below

1. Peptide bond
2. all of these
3. proline
4. Hydrogen bond
5. Alpha helix
6. Beta pleated sheets
7. Carbonyl oxygen of one peptide bond to the NH group of the 4th amino acid away
8. All of these
9. glycine

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10. Refers to organisation and spatial arrangements of proteins with many polypeptide chains

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1. Two bacteria found to be very useful in genetic engineering experiments are
   A. Escherichia and Agrobacterium
   B. Nitrobacter and Azotobacter
   C. Nitrosomas and Klebsiella
   D. Rhizobium and Diplococcus

2. Crown gall disease in plants is caused by
   A. Ti plamid
   B. Pi plasmid
   C. virus
   D. bacteria

3. Golden rice is a promising transgenic crop. When released for cultivation, it will help in
   A. alleviation of vitamin A deficiency
   B. high lysine content
   C. insect resistance
   D. None of these

4. Gel electrophoresis is used for
   A. isolation of DNA molecules
   B. cutting of DNA into fragments
   C. separation of DNA fragments according to their size
   D. construction of recombinant DNA by joining with cloning vectors

5. Which of these are most widely used in genetic engineering?
   A. plastid
   B. plasmid
   C. mitochondria
   D. ribosome

6. New strain of bacteria which is used in chewing up oil spoilage is
   A. Escherichia coli
   B. Bacillus subtilis
   C. Salmonella typhimurium
   D. Pseudomonas putida

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7. Cryopreservation of seeds is done at:
   A. 0 oC
   B. -10 oC
   C. -196 oC
   D. -25 oC

8. Electroporation involves
   A. promotion of seed germination by induced imbibition of water with electric current
   B. passage of sucrose through sieve pores by electroosmosis
   C. purification of saline water with the help of an artificial membrane
   D. making transient pores in cell membrane to facilitate entry of gene constructs

9. Known sequence of DNA that is used to find complementary DNA strands, is
   A. DNA probe
   B. vector
   C. recombinant DNA
   D. plasmid

10. Variable Number of Tandem Repeats (VNTRs) in the DNA molecule are highly useful in
   A. DNA finger printing
   B. stem cell culture
   C. recombinant DNA technology
   D. monoclonal antibody production

Above 10 MCQs Questions Correct Answers is Given Below

1. Escherichia and Agrobacterium
2. Ti plamid
3. alleviation of vitamin A deficiency
4. separation of DNA fragments according to their size
5. plasmid
6. Pseudomonas putida
7. -196 oC
8. making transient pores in cell membrane to facilitate entry of gene constructs
9. DNA probe
10. DNA finger printing

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1. Totipotency means
   A. flowering in culture medium
   B. development of fruit from a flower in a culture
   C. development of an organ from a cell in culture medium
   D. all of these

2. Haploid plants can be obtained from
   A. bud culture
   B. leaf culture
   C. root culture
   D. anther culture

3. In tissue culture medium, the embryoids formed from pollen grains is due to
   A. cellular totipotency
   B. organogenesis
   C. double fertlization
   D. test tube culture

4. In plant tissue culture, which of the following shows totipotency?
   A. meristem
   B. sieve tube
   C. xylem vessel
   D. collenchyma

5. In tissue culture of parenchyma, mitosis is accelerated in the presence of
   A. auxin only
   B. cytokinin only
   C. auxin and cytokinin
   D. auxin and gibberellin

6. In plant tissue culture, the callus tissues can be regenerated into complete plantlets primarily by altering the concentration of
   A. sugars
   B. vitamins
   C. amino acids
   D. hormones

7. A major application of embryo culture is in
   A. clonal propagation
   B. production of embryoids
   C. overcoming hybridisation barriers

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D. induction of somaclonal variations

8. The problem of necrosis and gradual senescence while performing tissue culture can be overcome by
   A. spraying auxins
   B. spraying cytokinins
   C. suspension culture
   D. subculture

9. The final stage in the tissue culture programme before the new plants are taken out for cultivation in the fields is known as
   A. hardening
   B. micropropagation
   C. caulogenesis
   D. embryogenesis

10. Somaclonal variation appears in plants
   A. growing in polluted soil or water
   B. exposed to gamma rays
   C. raised in tissue culture
   D. transformed by recombinant DNA technology

Above 10 MCQs Questions Correct Answers is Given Below

1. development of an organ from a cell in culture medium
2. anther culture
3. cellular totipotency
4. meristem
5. auxin and cytokinin
6. hormones
7. overcoming hybridisation barriers
8. spraying cytokinins
9. hardening
10. raised in tissue culture

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1. The linking of antibiotic resistance gene with plasmid vector became possible with DNA ligase
   A. exonucleases
   B. endonucleases

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C. DNA polymerases
D. None of these

2. Human insulin is being commercially produced from a transgenic species of
A. Rhizobium
B. Escherichia
C. Mycobacterium
D. Saccharomyces

3. A transgenic food crop which may help in solving the problem of night blindness in developing countries is
A. Bt soyabean
B. Flavr Savr Tomatoes
C. Golden rice
D. Starlink maize

4. What is Antisense technology?
A. when a piece of RNA that is complemetary in sequence is used to stop expression of a specific gene
B. RNA polymerase producing DNA
C. production of somacloal variants in tissue cultures
D. a cell displaying a forign antigen used for synthesis of antigens

5. Which of the following plant species you would select for the production of bioethanol?
A. Zea mays
B. Jatropha
C. Brassica
D. Pongamia

6. Cry I endotoxins obtained from Bacillus thuringiensis are effective against
A. nematodes
B. flies
C. boll worms
D. mosquitoes

7. Which one of the following is commonly used in transfer of foreign DNA into crop plants?
A. Trichoderma harzianum
B. Pencillium expansum
C. Agrobacterium tumefaciens
D. Meloidogyne incognita

8. Which one of the following is used as vector for cloning genes into higher organisms?
A. Retrovirus

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B. Baculovirus
C. Salmonella typhimurium
D. Rhizopus nigricans

9. Which of the following are used in gene cloning
A. lomasomes
B. mesosomes
C. nucleoids
D. plasmids

10. Gel electrophoresis is used for
A. construction of recombinant DNA by joining with cloning vectors
B. cutting of DNA into fragments
C. separation of DNA fragments according to their size
D. isolation of DNA molecules

Above 10 MCQs Questions Correct Answers is Given Below

1. DNA ligase
2. Escherichia
3. Golden rice
4. when a piece of RNA that is complemetary in sequence is used to stop expression of a specific gene
5. Zea mays
6. boll worms
7. Agrobacterium tumefaciens
8. Retrovirus
9. plasmids
10. separation of DNA fragments according to their size

---

1. The polymerase chain reaction or PCR is a technique that
A. was used to demonstrate DNA as the genetic material
B. is used to determine the content of minera
C. uses short DNA primers and a thermostable DNA polymerase to replicate specific DNA sequences in vitro
D. measures the ribosome transfer rate during translation

2. Positional cloning refers to:

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A. using a selection procedure to clone a cDNA
B. cloning a portion of a gene using PCR
C. Isolating a gene by PCR using primers from another species
D. Mapping a gene to a chromosomal region and then identifying and cloning a genomic copy of the gene from the region

3. RFLP analysis is a technique that
A. uses hybridization to detect specific DNA restriction fragments in genomic DNA
B. Is used to determine whether a gene is transcribed in specific cells
C. Measures the transfer frequency of genes during conjugation
D. Is used to detect genetic variation at the protein level

4. The PCR used to generate single stranded copies of a DNA sequencing or can be used as probes or even as primers
A. Inverse PCR
B. RT PCR
C. Real Time PCR
D. Asymmetric PCR

5. Which of the following is the function of polynucleotide kinase, the enzyme used in DNA recombinant technology?
A. Add a phosphate to the 3' OH end of the polynucleotide to label it or permit ligation
B. Add phosphate tails to the 3' OH ends of a linear duplex
C. Add phosphate tails to the 5' OH ends of linear duplex
D. None of the above

6. Techniques used for study of gene expression
A. DNA microarrays
B. DNA hybridisation
C. Both
D. None Of These

7. The techniques of transfer of DNA molecules separated by gel electrophoresis to the nitrocellulose or nylon membrane is called
A. Northern Blot
B. Southern Blot
C. Western Blot
D. None Of These

8. DNA sequencing is done by
A. Maxam Gilbert

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B. Sanger dideoxy method
C. Watson -Crick
D. Maxam Gibert and Sanger dideoxy method

9. The length of the DNA associated with a protein is determined using the technique
A. DNA replication
B. DNA fingerprinting
C. DNA printing
D. DNA footprinting

10. Small samples of proteins are detected by
A. Southern Blotting
B. Northern Blotting
C. Eastern Blotting
D. Western Blotting

Above 10 MCQs Questions Correct Answers is Given Below

1. uses short DNA primers and a thermostable DNA polymerase to replicate specific DNA sequences in vitro
2. Mapping a gene to a chromosomal region and then identifying and cloning a genomic copy of the gene from the region
3. uses hybridization to detect specific DNA restriction fragments in genomic DNA
4. Asymmetric PCR
5. None of the above
6. DNA microarrays
7. Southern Blot
8. Maxam Gibert and Sanger dideoxy method
9. DNA footprinting
10. Northern Blotting

---

1. Who discovered recombinant DNA (rDNA) technology?

A. Har Gobind Khorana
B. J.D.Watson
C. Sutton and Boveri
D. Stanley Cohen and Herbert Boyer

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2. Match the names of the scientists with their contributions and choose the correct answer

A. Walter Sutton 1) Discovered Penicillin
B. Stanley Cohen 2) Discovered double helical structure of DNA
C. Alexander Flemming 3) Discovered the chromosomal basis of heredity
D. James.D.Watson 4) Discovered r-DNA

A-2, B-1, C-4, D-3
A-3, B-4, C-1, D-2
A-1, B-3, C-2, D-4
A-4, B-3, C-2, D-1

3. Which of the following is a plasmid?

A. Sal I
B. Bam H1
C. Eco R1
D. pBR322

4. Restriction enzymes are

A. DNA unwinding enzymes
B. DNA joining enzymes
C. DNA cleaving enzymes
D. None Of These

5. The enzyme used to join the DNA fragments

A. Topoisomerase
B. DNA ligase
C. DNA polymerase
D. Reverse transcriptase

6. Which of the following is used as vector in gene therapy for SCID

A. arbovirus
B. rotavirus
C. parvovirus
D. retrovirus

7. Ti plasmid used in genetic engineering is obtained from

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A. Bacillus thuringiensis
B. Agrobacterium rhizogenes
C. Agrobacterium tumefaciens
D. Bacillus subtilis

8. The vector for T-DNA is

A. Thermus aquaticus
B. Bacillus tumefaciens
C. Agrobacterium tumefaciens
D. Escherichia coli

9. cry II Ab and cry I Ab produce toxins that control

A. Corn borer and tobacco budworms respectively
B. Nematodes and tobacco budworms respectively
C. Cotton bollworms and corn borer respectively
D. Corn borer and cotton bollworms respectively

10. In genetic engineering, a DNA segment (gene) of interest, is transferred to the host cell through a vector. Consider the following four agents (i-iv) in this regard and select the correct option about which one or more of these can be used as a vector/ vectors

i) Bacterium ii) Plasmid iii) Plasmodium iv) Bacteriophages
i, ii and iv
ii and iv
i and iv
i only

Above 10 MCQs Questions Correct Answers is Given Below

1. Stanley Cohen and Herbert Boyer
2. A-3, B-4, C-1, D-2
3. pBR322
4. DNA cleaving enzymes
5. DNA ligase
6. retrovirus

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7. Agrobacterium tumefaciens
8. Agrobacterium tumefaciens
9. Cotton bollworms and corn borer respectively
10. ii and iv

---

1. DNA fingerprinting was developed by
   A. Watson and Crick
   B. Yamanaka
   C. Alec Jeffrey
   D. Paul Berg

2. Which of the following technique is used in DNA fingerprinting
   A. Western blotting
   B. Flow cytometry
   C. Northern blotting
   D. Southern blotting

3. DNA fingerprinting relies on identifying specific
   A. coding sequences
   B. non-coding sequences
   C. both a and b
   D. promoters

4. DNA fingerprinting relies on identifying minisatellites which are
   A. repetitive coding short DNA sequences
   B. repetitive non-coding short DNA sequences
   C. repetitive coding and non-coding short DNA sequences
   D. non-repetitive non-coding short DNA sequences

5. Which of the following is true regarding minisatellites
   A. rich in GC pairs
   B. individuals vary in size, number and location of these minisatellites
   C. also called as VNTRs
   D. all of these

6. Multilocus probes used in DNA fingerprinting are
   A. short length of DNA that binds to target DNA at several places
   B. RNA probes
   C. long length of DNA that binds to target DNA at a single point

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D. RNA and DNA probes

7. Short stretches of DNA used to identify complementary sequence in a sample is called
   A. probes
   B. markers
   C. VNTRs
   D. minisatellites

8. All are applications of DNA fingerprinting except
   A. in forensic science
   B. to settle disputed parentage
   C. to amplify a minisatellite
   D. diagnosis of inherited disorders

9. Which types of probes are commonly used in forensic science
   A. multilocus probes
   B. singlelocus probes
   C. both a and b
   D. RNA probes

10. Arrange DNA finger printing procedure in the correct order
   A. 1-restriction digestion 2-DNA isolation 3-electrophoresis4-southern blotting 5-probe hybridization-6) autoradiograph
   B. 1-DNA isolation 2-electrophoresis 3- restriction digestion4-southern blotting 5-probe hybridization-6) autoradiograph
   C. 1-DNA isolation 2-restriction digestion 3-electrophoresis4-probe hybridization 5-Southern blotting-6-autoradiograph
   D. 1-DNA isolation 2-restriction digestion 3-electrophoresis 4-southern blotting 5-probe hybridization-6) autoradiograph

Above 10 MCQs Questions Correct Answers is Given Below

1. Alec Jeffrey
2. Southern blotting
3. non-coding sequences
4. repetitive non-coding short DNA sequences
5. all of these
6. short length of DNA that binds to target DNA at several places
7. probes
8. to amplify a minisatellite

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9. singlelocus probes
10. 1-DNA isolation 2-restriction digestion 3-electrophoresis 4-southern blotting 5-probe hybridization-6) autoradiograph

---

1. Totipotency means
   A. flowering in culture medium
   B. development of fruit from a flower in a culture
   C. development of an organ from a cell in culture medium
   D. all of these

2. Haploid plants can be obtained from
   A. bud culture
   B. leaf culture
   C. root culture
   D. anther culture

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6. In plant tissue culture, the callus tissues can be regenerated into complete plantlets primarily by altering the concentration of
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C. amino acids
D. hormones

7. A major application of embryo culture is in
A. clonal propagation
B. production of embryoids
C. overcoming hybridisation barriers
D. induction of somaclonal variations

8. The problem of necrosis and gradual senescence while performing tissue culture can be overcome by
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3. cellular totipotency
4. meristem
5. auxin and cytokinin
6. hormones
7. overcoming hybridisation barriers
8. spraying cytokinins
9. hardening
10. raised in tissue culture

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