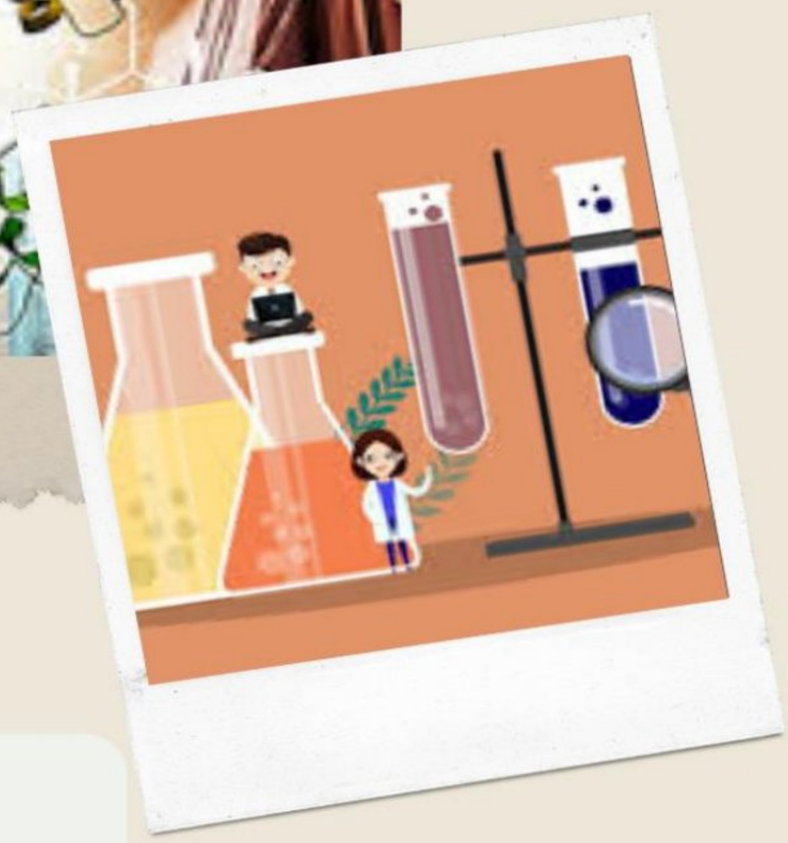
biochemistry

FINAL little info



DATE 10/9/2022

SUBJECT every littel info

MADE BY : EBAA AL-ZUBI

Amino acids

1- The amino acids that occur in proteins naturally are all of the ---------- form.

L

2- WHICH amino acids in proteins IS superimposable on its mirror images (ACHIRAL)?

glycine

3- There are twenty kinds of amino acids varying in all of the following except ?

A. Shape
B. Charge
C. Presence of c-c bond
D. Hydrogen-bonding capacity
E. Hydrophobic character

4- all of the following amino acids are polar except ?

A. Serine
B. Tyrosine
C. Asparagine
D. Proline
E. Threoeine

5- WHICH amino acids in proteins form SAM (methyl donor) ?

A. Methionine
B. Serine
C. Tyrosine
D. Asparagine
E. Proline

6- How many carbon atoms in proline without considering @ carbon ?

A. 1
B. 3
C. 4
D. 5

3	4	5	6
C	D	A	B

7- WHICH COUPIE OF AMINO ACIDS ARE DIFFERANT BY A PLUS METHYL TO BETA CARBON?

A. Serine &Proline
B. Threoeine & Serine
C. ALANINE & VALINE
D. NONE
E. MORE THAN ONE ANSWEAR

8- Cysteine HAS A Thiol group WHICH IS ?

A. O=C-NH2
B. CH2-SH
C. C6H6

9- Phenylalanine DIFFER FROM Tryptophan BY ?

A. ADDING 5-RING TO BETA CARBON
B. LOSING 5-RING TO BETA CARBON
C. ADDING 5-RING TO ALPHA CARBON
D. LOSING 5-RING TO ALPHA CARBON

10- What Distinguishes Arginine FROM OTHER AMINO ACIDS IS ?

A. IMIDASOLE
B. guanidino group
C. INDOLE
D. Thiol group

11- WHICH OF THE FOLLOWING DOSN'T RELATE TO TYROSINE ?

A. catecholamine neurotransmitters
B. flight or fight
C. skin color & Thyroxine (hormone)
D. Cheese
E. allergic symptoms

12- Tyrosine is converted into Melanin (skin color) , WHICH ONE OF THE FOLLOWING IS GIVING DARKER COLOR ?

A. EUMelanins
B. PHEOMelanins

7	8	9	10	11	12
E (B+ C)	B	B	B	E	A

13- NOT TRUE ABOUT GABA ?

A. GABA have relaxing, anti-anxiety, and anti-convulsive effects
B. it does not cross the BBB
C. GABA is synthesized in brain and bone marrow
D. It is derived from Glutamate

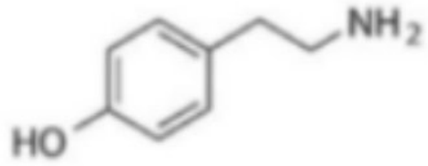
14- WHICH amino acid need Vitamin K to be carboxylated for clotting factors?

A. Methionine
B. Serine
C. glutamate
D. Asparagine
E. Proline

15- Chinese restaurant syndrome caused by ?

A. GABA
B. SAM
C. MSG
D. CNS

The following structure represents a molecule that:



A. Cannot be considered an amino acid
B. Can produce Epinephrine
C. Is produced by decarboxylation of Histidine
D. Can produce Serotonin
E. Is produced by hydroxylation of phenylalanine

16-

17- All of the following is polar, uncharged amino acid, except:

A. Cys B. Tyr

C. Asn D. Asp

18- one of the following is essential amino acid that the body can not synthesize :

A. leucine B. valine

C. serine D. A+B

E. all of the above

13	14	15	16	17	18
C	C	C	A	D	D

19- The amino acid that consists of a charged amino group in its side chain:

A. His B. Lys

C. Asp D. Gln E. Pro

20- Which group has the correct classification?

A. {Ala, Val, Gli, Leu} nonpolar B. {Ser, Asn, Arg} polar

C. {Gln, Trp, Met} uncharged D. B+C

21- The amino acid arginine contains a guanidino R-group and has pKa values of 2.2, 9.0, and 12.5. A sample of arginine is titrated from pH=1.0 to pH=14.0 with NaOH. At pH=2.2

A. all of the amino acid molecules will be in the fully protonated form

B. half of the amino acid molecules will be in the fully protonated form

C. all of the amino acid molecules will be in the zwitterion form

D. half of the amino acid molecules will be in the zwitterion form

Methionine is produced from homocysteine by...?

A ...adding a carboxyl group.

B ...loss of ammonium ion.

C ...succinylation.

D ...phosphorylation.

E ...the addition of a methyl group to the sulfur atom.

22-

19	20	21	22
B	D	B	E

23- Which property is shared by both arginine and aspartate as each is titrated with NaOH from pH=1.0 to pH=14.0?

A. Both will require the same number of NaOH equivalents to complete the titration

B. Both will have the same number of equivalence points at the same pH values

C. Both will have the same net charge at pH=1.0

D. Both will have the same net charge at pH=14.0

24-

Which part of amino acid gives it unique characteristics, structure, function, and chemistry?

A Carbonyl carbon

B Alpha carbon

C R group

D Alpha amine

E Hydroxyl group

25-

Essential amino acids are amino acids that must be what?

A Synthesized by an organism

B In the ribosome

C In the nucleus

D In the endoplasmic reticulum

E In an organism's diet

23	24	25
A	C	E

26- The amino acids have a carboxyl group with a pK around _____ ,and an amino group with a pK near _____ .

A. 1.1 and 12.1

B. 6.5 and 8.0

C. 3.3 and 10.5

D. 9.0 and 2.5

E. 2.0 and 9.5

27- The amino acid alanine has two pKa values 3.8 for the COOH group and 9.9 for the NH3+ group .What is the pl for this compound??

A. 7.0

B. 1.0

C. 12

D. 3.5

28- When the amino acid alanine (the R group is: CH3) is added to a solution with a pH of 7.3 , alanine becomes:

A. A cation

B. non-polar

C. a zwitterion

D. an isotope

29- The isoelectric point of an amino acid is defined as :

A. The pH where the molecule carrier no net electric charge .

B. The pH where the carboxyl group is uncharged .

C. The pH where the amino group is uncharged .

D. The pH of maximum electrolytic mobility

E. $-\boldsymbol{log10(pKi + pKJ)}$

26	27	28	29
E	A	C	A

30- Which of the following amino acids has a net charge of +2 at low pH?

A. Aspartic acid

B. alanine and glutamic acid

C. arginine and lysine

D. leucine

31- Which has a net charge of -2 at high pH?

A. Aspartic acid and glutamic acid

B. alanine

C. arginine and lysine

D. leucine

32- For a solution of tyrosine molecules at pH = 10.2 :

A. all the α-carboxyl groups will be uncharged

B. all the α-amino groups will be uncharged

C. all the phenolic R-groups will be uncharged

D. all the ionizable groups will be uncharged

33- The amino acid tyrosine contains a phenolic R-group and has pKa values of 2.2, 9.0, and 10.2. A sample of tyrosine is titrated from pH = 1.0 to pH = 14.0 with NaOH. At which pH will all the amino acid molecules be in their fully protonated form?

A. 1.0 B. 2.2

C. 5.6 D. 9.0

34- 19. At which pH will half the amino acid (without ionizable R groups) molecules have a +1 charge?

A. 10.2 B. 9.0

C. 2.2 D. 1.0

30	31	32	33	34
C	A	B	A	C

Peptide bond formation and peptides

1- **ALL AMINO ACIDS ARE TRANS configuration EXCEPT ?**

PROLINE

2- **WHY The peptide bond is stronger ? because of the resonance stabilization**

3- **NOT TRUE ABOUT Carnosine ?**

A. A naturally occurring dipeptide
B. prevent Muscle contraction
C. Protection of cells from ROS (radical oxygen species)
D. It is highly concentrated in muscle and brain tissues

4- **Some oxidizing agents are harmful and play a role in the development of cancer, which one is an oxidizing agent ?**

A. Enkephalins
B. Glutathione
C. Carnosine
D. Morphine

5- **which one is a pain relievers in brain ?**

A. Enkephalins
B. Glutathione
C. Carnosine
D. Morphine

3	4	5
B	B	A

6- ALL of the following is true about Oxytocin and vasopressin except ?

A. Both are Cyclic structures
B. Both are hormones
C. Each has a disulfide link between Cys residues at positions 2 and 6
D. Each has an amide group at the C-terminal end

7- Oxytocin and vasopressin differ in positions ?

A. 3&8
B. 2&6
C. 3&5
D. 3&4

8- In Oxytocin , positions 3 & 8 are ile & leu , what are they in vasopressin ?

A. Arg & leu
B. Phe & ala
C. Glu & phe
D. Phe & arg

9- Which hormones are controlling of blood pressure & controlling contraction of uterine respectively ?

A. Enkephalins & Glutathione
B. Vasopressin & Oxytocin
C. Gramicidin S and Tyrocidine A
D. Oxytocin and vasopressin

10- which one is decapeptides ?

A. Vasopressin
B. Glutathione
C. Enkephalins
D. Gramicidin

6	7	8	9	10
C	A	D	B	D

11- NOT TRUE ABOUT Gramicidin S and Tyrocidine A ?

A. Cyclic structure
B. Two cyclic decapeptides
C. antibiotics contain D-amino acids and L-amino acids
D. contain the amino acid ornithine (L - Orn)

12- methyl ester will taste bitter if it is ---------- isomer .

A. L & L
B. L & D
C. D & D
D. (A + C)
E. (B+ C)

13-

- Beta-alanine is part of this molecule ?
- a.Oxytocin
- b.Aspartame
- c.Carnosine
- d.Glutathione
- e.Elastin

11	12	13
D	E	C

Protein Structure

1- ALL ARE FALSE ABOUT PROTEIN EXCEPT ?

A. All have repeating inner structures
B. All may have gazillion possibilities of structures
C. All made of multiple polypeptides
D. All are sequence of fatty acid residues
E. The primary structure of a protein doesn't determine the other levels of structure.

2- ALL ARE true ABOUT Sickle cell hemoglobin except ?

A. It is caused by a change of amino acids in the 6th position
B. change B globin (Glu to Val)
C. arrays of aggregates of hemoglobin molecules
D. deformation of the white blood cell
E. clotting in blood vessels and tissues

3-

What are the main forces that were described as stabilizing secondary structure?

A Carbon-carbon bonds

B Covalent bonds

C Hydrogen bonds

D Disulfide bonds

E Ionic bonds

1	2	3
C	D	C

4- The helix has an average of --------- amino acids per turn.

A. 5.4
B. 3.6
C. 6.8
D. 10

Which of the four levels of protein organization has a regular repeating structure arising from interactions of nearby amino acids?

A Tertiary

B Quaternary

C Primary

D Secondary

5-

6- α-helix DOESN'T have ?

A. Glycine
B. Proline
C. Close pair of charged amino
D. Valine & threonine
E. All of above

7- β sheets are all of the following except :

A. typically 4 or 5 strands
B. purely antiparallel
C. purely parallel
D. 10 & more strands
E. Proline tend to be present

8- Which one can't disrupt or break proteins ?

A. Heat
B. Ph
C. Triton X-100 & SDS
D. Urea and guanidine hydrochloride
E. None

9- Which match is false :

A- DTT & disulfide bonds

B – SDS & electrostatic interactions

C - βME & hydrophobic forces

D – PH & hydrogen bonds

4	5	6	7	8	9
B	C	E	E	E	C

10- INCORRECT ABOUT prion diseases ?

A. Creutzfeldt-Jacob disease (in humans)
B. scrapie (in sheep)
C. PrPC has a lot of α-helical conformation
D. PrPc has more β strands

11- INCORRECT ABOUT Classes of glycoproteins ?

A. N – asparagine
B. O – serine
C. N- threonine
D. O- hydroxylysine

12-

Which of the following correctly describes a disulfide bond?

A Hydrogen bond

B Hydrophobic bond

C Ionic bond

D Metallic bond

E Covalent bond

13-

Which is the strongest bond in a tertiary structure?

A Hydrophobic bond

B Metallic bond

C Ionic bond

D Hydrogen bond

E Disulfide bond

10	11	12	13
D	C	E	E

14-

The disulfide bond occurs between which of the following?

A Two methionine amino acids

B Methionine and cysteine amino acids

C Two cysteine amino acids

D Methionine and proline amino acids

15-

One of the following is TRUE in regards to prion disease ?

a.The disease can be inherited

b.The disease is caused by defective chaperones

c.The defective prion protein disrupts proteinsynthesis

d.It is a human-specific disease

e.The prion protein does not have a tertiarystructure

16-

Cysteines play an important role in the formation of the quaternary? structure of this protein

a.Myoglobin

B.Immunoglobulin

c.Collagen

D.Carbonic anhydrase

e.Hemoglobin

14	15	16
C	A	B

Globular proteins

1- ALL ARE TRUE ABOUT myoglobin EXCEPT ?

A. Myoglobin binds O2 with high affinity.
B. Upon absorption of light, heme gives a deep red color
C. Fe is in the ferric state can form 6 bonds
D. F8 His is designated distal His
E. (D+C)

2- WHICH ONE DISCRIBE THE Structure-function relationship OF MYOGLOBIN ?

A. The planar heme group fits into a hydrophobic pocket
B. The heme group stabilizes the tertiary structure
C. distal histidine acts as a gate that opens and closes as O2 enters
D. The hydrophobic interior of myoglobin (or hemoglobin) prevents the oxidation of iron
E. ALL OF ABOVE

3- WHAT WE MAEN BY **Binding is cooperative** ? Binding of the first O2 breaks some salt bridges with the other chains increasing the affinity of the binding of the second

4- All of the following are false about Hemoglobin except ?

A. T-state = "relaxed" state
B. the low affinity R-state to the high affinity T- state
C. As the oxygen pressure falls, oxygen is released to the cells
D. oxygen pressure found in lungs (approximately 20 mm Hg)
E. Hemoglobin is monomeric hemeprotein

5- Which one is true ?

A. Binding isn’t cooperative
B. sudden drop in pulmonary capillary oxygen tension does not affect hemoglobin saturation
C. In myoglobin, movement of the helix does not affect the function
D. (b+c)
E. All of the above

1	2	3	4	5
E	E	▲👆	C	D

Fibrous proteins

1- ALL ARE TRUE ABOUT collagen EXCEPT ?

A. the most abundant proteins in mammals
B. primary feature of collagen molecule is stiffness
C. collagen helix is much more extended with 3.6 residues per turn THAN @ -helix
D. Glycine allows the three helical a chains to pack tightly

2- Order from smaller to larger ?

A. Protocollagen microfibril fibrils fibers
B. microfibril fibrils Protocollagen fibers
C. Fibers fibrils microfibril Protocollagen

3- What is the purpuse of hydroxyproline ?

A. stabilize the side-by-side packing
B. allows the three helical a chains to pack tightly
C. Without it the collagen helix is unstable and loses most of its helical
D. caused a dietary deficiency of ascorbic acid (vitamin C)

4- Scurvy is ?

A. Disease by deficiency of ascorbic acid (vitamin A)
B. prevention proline hydroxylation
C. Blood vessels become extremely fragile
D. teeth become loose in their sockets
E. All of above except A

5- WHICH ONE IS NOT TRUE ?

A. collagen fibrils are interwoven with the elastic fibers PREVENTING tissue from tearing
B. Elastin contains some hydroxyproline, hydroxylysine , proline and glycine
C. Three allysyl side chains plus one unaltered lysyl side chain form a desmosine crosslink
D. @-keratin has an unusually high content of cysteine

6- ORDER FROM SNALLEST TO LARGEST?

A. Dimer protofibril macrofibril macrofibril B – macrofibril macrofibril protofibril Dimer

1	2	3	4	5	6
C	A	C	E	B	A

fingernails get hard by disulfid bonds

A reducing substance (usually ammonium thioglycolate) is added to reduce some of the disulfide cross-links , then oxidizing agent, usually hydrogen peroxide, is added to reform the disulfide bonds new premenant hair style

Immunoglobulins

1- Class switching involves?
A.Changing the hypervariable region of antibodies.
B.Changing the constant region of antibodies only.
C.Changing the variable region of antibodies only.
d. Changing the B cells that produces the antibodies.
E.Changing both the variable and constant regions of antibodies.

2- Which of the following is FALSE considering immunoglobulin classes?
A- IgG is the first to be released
B- IgE can activate complement proteins
C- IgD cannot cross the placenta
D- IgA is the most abundant in blood
E- IgM is usually a pentamer

3- The role of the Fc fragment of any antibody molecule is:

A-To detect, bind and precipitate the antigen

B-To block interactions between host and pathogen

C-To block the active sites of toxins

D-To activate intracellular cell signaling molecules

E -None of the above

4- The order of quantity (largest to smallest) of total immunoglobulin? inserum is

A- IgM. IgA. IgG. IeD, IgE

B- IgG. IgM, IgA, IgE, IqD

C- IgG. IgA, IgM, IgE, IgD

D- IgA. IgM, IgG, IgD, IgE

E- IgG, IgA, IgM, IgD, IgE

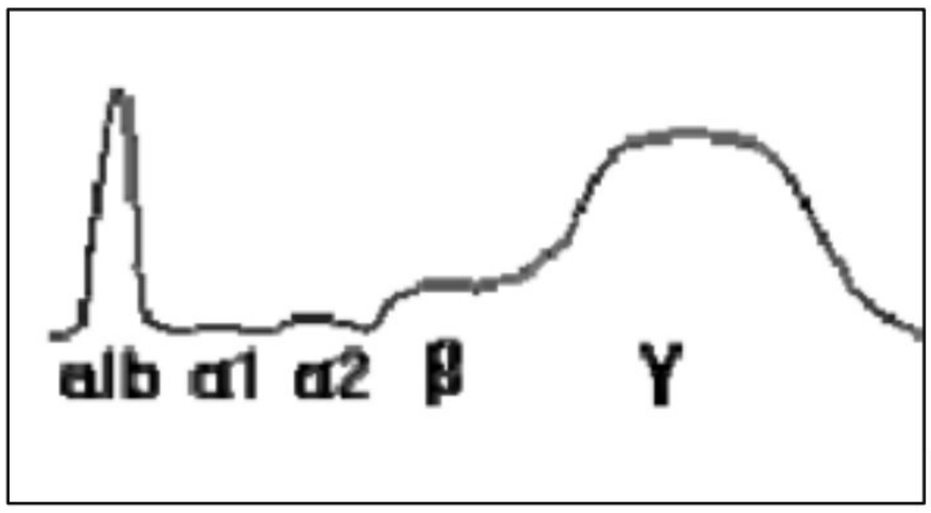
1	2	3	4
C	A	D	E

5- NOT OF THE Benefits of monoclonal antibodies ?

A. Determine the nature of infectious agents
B. Measure the amounts of many individual proteins and molecules
C. Used to direct therapeutic agents to tumor cells
D. LET drugs reach toxic levels

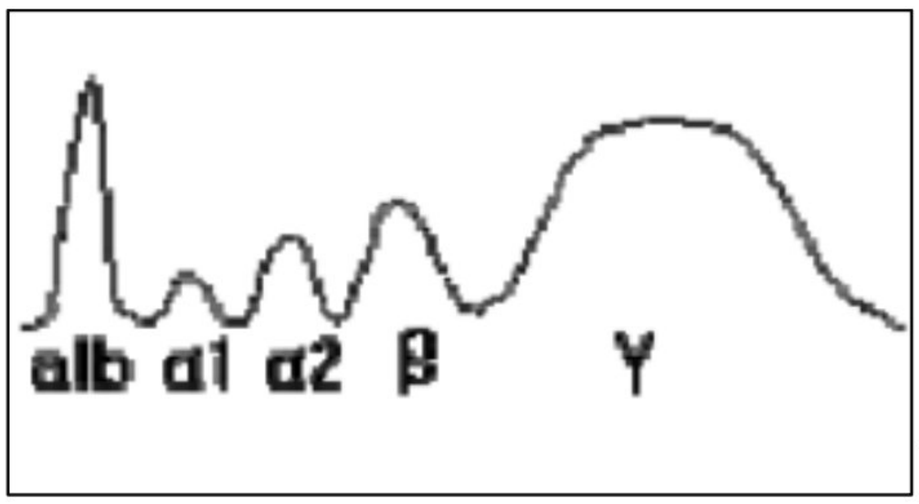
ANS : D

Plasma proteins

1- 

Is :

A. Chronic liver failure
B. Nephrotic syndrome
C. Plasma cell myeloma

2- 

Is :

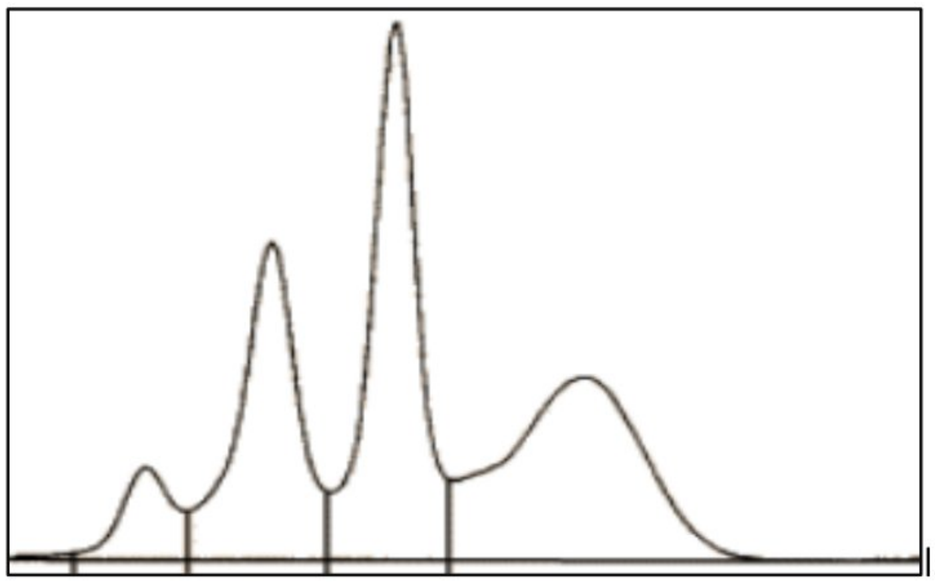
A. Chronic liver failure
B. Nephrotic syndrome
C. Longstanding inflammation

3- Which one is false :

A. Crohn's disease can affect half-lives
B. Plasma protein has A nutritive role
C. protein deficiency can cause edema
D. CRP is Negative acute phase proteins

4- Albumin is all of the following except ?

A. The Major Protein in Human Plasma
B. Synthesized as a preproprotein
C. One polypeptide chain, 585 amino acids, 17 disulfide bonds
D. Proteases subdivide albumin into 5 domains
E. It binds to Bilirubin & Plasma tryptophan

5-  Is ?

A. Nephrotic syndrome
B. Rare & It is a result of splicing mutation
C. Analbuminemia
D. Bilirubin toxicity
E. C+ B

1	2	3	4	5
A	C	D	D	E

6- select the one of the following statements that is NOT CORRECT:

A. Albumin is synthesized as a preproprotein

.B. Albumin is stabilized by multiple intrachain disulfide bonds

.C. Albumin is a glycoprotein

.D. Albumin facilitates the movement of fatty acids through thecirculation

.E. Albumin is the major determinant of plasma osmotic pressure

7- Select the one of the following statements that is NOT CORRECT:

A. Wilson disease caused by increased the concentration of the Ceruplasmin in blood

B. Wilson disease is characterized by copper toxicosis (abnormallyhigh levels of copper).

C. Wilson's disease is an autosomal recessive genetic disease.

D. Wilson caused bronzy skin and eyes tissue

8- Ceruloplasmin is:
(A) a1-globulin
(b) ß-globulin
(c) a2-globulin
(D) None of these

9- -Molecular weight of human albumin is about:
(A) 156,000
(b) 69,000
(c) 90,000
(D) 54,000

6	7	8	9
C	A	C	B

10- Choose the mismatch pair ?

A. Hypoalbiminemia --- Gastrointestinal loss of proteins
B. Bilirubin toxicity ----- kernicterus
C. High α1- antitrypsin------inactivation elastase
D. Low α1-fetoprotein ---- Down's syndrome

11- Choose the incorrect answer ?

A. Hb-Hp complex has shorter half-life than that of Hp
B. Low HP ---- hemolytic anemia
C. Wilson's, autosomal recessive genetic disease---- ceruloplasmin
D. Transthyretin --- Migrates lower than albumin

12- Not true about (CRP) ?

A. A homotetrameric acute phase inflammatory protein
B. Able to bind to a polysaccharide (fraction C) in the nucleus
C. Its level reaches a peak after 24 hours of incident
D. None are false
E. All are false

13- Undetectable in healthy individuals, detectable in many inflammatory diseases (Acute rheumatic fever, bacterial infection, gout, etc.) & Tissue damage , is ?

A. Ceruloplasmin
B. Transthyretin
C. Albumin
D. c- reactive protein

Which of the following proteins would you least expect to beinitially tagged with an N-terminal signal peptide:

A) Fibrinogen

B) Hemoglobin

C) Albumin

D) Alpha globulins

E) Gamma globulins

14-

10	11	12	13	14
C	D	E	D	B

Enzymes

How do enzymes catalyze chemical reactions?

1-

A. By lowering the free energy of the reactants.

B. By lowering the activation energy of the reaction.

C. By increasing the activation energy of the reaction.

D. By increasing the free energy of the reactants.

1-

Which of the following statement is FALSE regarding enzymes?

A. At the end of the enzymatic reaction, the enzyme regains its original shape by releasing the product/products from its surface.

B. An enzyme speeds up a biochemical reaction by lowering the activation energy.

C. During an enzymatic reaction, the enzyme brings changes in the substrate molecule or molecules to form a product or, products.

D. According to the induced fit model of enzyme action, the binding of substrate(s) also causes transient changes in the shape of the enzyme.

E. During an enzymatic reaction, the enzyme's shape gets changed permanently, hence the cell needs to produce an enzyme at faster speeds to keep it alive.

2-

In enzyme catalysis, which of the following statements is NOT true?

A. The enzyme in the ES complex has a different structure than the enzyme alone.

B. Catalysis only occurs in reactions with more than one substrate.

C. The binding of substrate induces a change in enzyme structure.

D. As a product is released, the enzyme reverts to its original structure.

3-

1	2	3
E	B	B

4-

Each enzyme only has 1 substrate that will fit its active site. What is this called?

A. reusablility

B. denaturation

C. specificity

D. fragility

5- An enzyme speeds up a chemical reaction in the cell but can only be used once. True or False?

A true

B false

6- Enzymes are...

A nucleic acids

B proteins

C lipids

D carbohydrates

7- The catalytic triad of the serine protease is composed of which of the following?

A Serine, histidine, and aspartic acid

B Serine, lysine, and histidine

C Serine, glycine, and aspartic acid

D Serine, glutamic acid, and histidine

E Serine, alanine, and selenocysteine

4	5	6	7
C	B	B	A

8- IN "EC 3.4.11.4" THE *subclass AND Major* class RESPECTIVELY ARE ?

A. 4 & 11
B. 11 & 3
C. 4 & 4
D. 3 & 11
E. NONE

9- Choose the mismatch pair ?

A. Oxidoreductases – Require heme
B. Hydrolases ---- addition of water
C. Lyases – break or make double bond

D. Ligases – favorable simultaneous hydrolysis reaction
E. Isomerases----one substrate and one product

10- One of the following is NOT true in regards to isozymes
a.They may have different affinities for their substrate(s)
b.They may be regulated differently
c.They may catalyze different reactions using the same substrate
d.They are produced from different genes
e.They may function in different tissues

11- Typically, one of the following characterizes enzymes' active sites ?
a.Large active sites usually have two separate, independent sites, catalytic and binding
b.They possess multiple strong attraction forces to physiological substrates
c.They are found on enzymes' surface
d.They possess a minimum of two binding points to substrate
e.They are comparable in size to the rest of the enzyme's structure

12- **Which statement is FALSE regarding enzyme activity:**
A -The maximum catalytic activity is highly dependent on pH and temperature
B- The reaction rate increases as PH increases until it reaches the maximum
C- The reaction rate increases as temperature increases until it reaches amaximum
D-The reaction rate increases as enzyme concentration increases
E- reaction ate increases as substrate concentration increases until it reaches amaximum Vmax

13- One of the following is a precursor for the synthesis of CoA ?
a.Biotin
b.None of the answers is a precursor
c.Acetyl group
d.Pantothenic acid
e.Niacin

8	9	10	11	12	13
B	D	C	A	B	D

14- WHICH ONE IS MISMATCH PAIR ?

A. Oxidases -- hydrogen peroxide as a by-product
B. Peroxidases – 2GSH TO GSSG
C. A transaminase – PYRUVIC ACID TO ALANINE
D. Trypsin-- on the amino side of lysine and arginine
E. Isomerase – one reactant

15- WHICH ONE IS MISMATCH PAIR ?

A. Thiamine pyrophosphate – B1
B. CoA – B5
C. Biotin – B8
D. Pyridoxine PLP – B6
E. NAD+ -- B3

16- NOT TRUE ABOUT NAD+ ?

A. It is B2
B. Accepts a hydride ion
C. (ADP) portion of the molecule binds weakly
D. (A+ B)
E. (A+ C)

17- WHICH ONE IS MISMATCH PAIR ?

A. Alanine – pyruvate
B. Glutamate – ketoglutarate
C. Aspartate – oxaloacetate
D. All are true
E. All are false

18-

Considering the enzyme “Alcohol Dehydrogenase”, what is true?

a.More than one answer is true

b.May be referred to as 3.2.1.1

c.Requires FAD

d.Requires Se

e.Requires Zn+2

19- One is true about ALDH ?

A. Oxidation of acetaldehyde to acetate ,
B. Four pentameric isozymes (I-IV)
C. ALDH II (low Km; mitochondrial)
D. 50% of Japanese & Chinese are unable to produce ALDH II
E. observed in Caucasian & Negroid populations

14	15	16	17	18	19
D	C	E	D	E	A

20- NOT TRUE ABOUT [DFP] ?

A. It is a Covalent inhibitor
B. served as a prototype for gas sarin
C. DFP also inhibits enzymes that use serine
D. extremely tight bonds with active site amino acids
E. the inhibition of serine is strong as lethal

21- Not a 2.1 inhibitor ?

A. [DFP]
B. Penicillin
C. Aspirin
D. ATCase
E. Allopurinol

22- regulatory mechanisms include Allosteric activation and inhibition are ----- *EXCEPT* ?

A. Binding triggers a conformational change in the active site
B. The Michaelis-Menten model explain the kinetic properties
C. The substrate concentration at half of the Vmax is called (K0.5)
D. Allosteric inhibitors have a much stronger effect on enzyme velocity
E. As L (T/R) increases, the shape becomes more sigmoidal

23- Phosphorylation IS ?

A. Adds two positive charges
B. Can't form three or more hydrogen bonds
C. Can't take place in less than a second or over a span of hours
D. causes highly amplified effects
E. IRREVERSIBLE , Phosphorylase a is usually active

24- WHICH ONE IS A MISMATCH ?

A. High (PKA)& high (cAMP)
B. Add AMP & activates certain cytosolic enzymes
C. Methylation & masks a negative charge
D. Acetylation & masks positive charges
E. None

25- Methotrexate is ?

A. 2.1.A
B. 2.1.B

C. 2.1.C
D. 3.A
E. 2.2.A

26- WHICH ONE IS INCORRECT ?

A. Chymotrypsinogen: single polypeptide chain (245 residues), 5 (S—S) bonds
B. Trypsin, chymotrypsin, pepsin = cleavage zymogens
C. Enzyme Synthesis Usually fast in humans
D. gluconeogenesis increase & protein degradation increases
E. None

27- High temperature causes ?

A. enzyme denaturation
B. Hypothermia
C. metabolic reactions
D. cardiac surgery
E. All of above

20	21	22	23	24	25	26	27
E	D	B	E	B	B	C	E

28- WHICH ONE IS INCORRECT ?

A. (ALT/AST) LESS than 1 is = liver disease diagnose
B. (ALT/AST) more than 1 = viral hepatitis
C. (LDH-1/LDH-2) less than 1 = normal
D. (LDH-1/LDH-2) more than 1 = acute myocardial infarct
E. None

29- Incorrect place for CPK ?

A. CPK3 (CPK-MM) = muscle
B. CPK2 (CPK-MB) = skeletal muscle
C. CPK1 (CPK-BB) = cardiac muscle
D. CPK1 (CPK-BB) = brain

30- Suppose you have an imaginary reaction catalyzed by the enzyme Medicinase. Repeating the reaction in presence of a competitive inhibitor will:

a.Change the K2 value

b.Change the y-intercept on a lineweaver-burk plot

c.Change the actual affinity toward the substrate

d.Increase the specificity constant

e.Change the Kcat value

31- You performed an experiment on an enzyme that follows Michaelis-Menten kinetics with a Km value of 0.50 uM. Then, the Vmax of this enzyme:

a.Can be achieved at a substrate concentration of 2 uM

b.Does not change in value if substrate concentration is 0 uM

c.Can be achieved at a substrate concentration of 1 uM

d.Can be achieved at a substrate concentration of 1.5 uM

e.Does not change in value if half of the enzyme concentration is used

32- The reaction A+B-C the rate equation is = K[A], according to what youhave studied in the enzymology class, which statement is true:

A- plot of [A] against time is linear

B- plot of [B] against time is expontial

C- the rate depends on concentration of B

D-the rate depends on concentration of A

E- the unit of rate equation is (time)-1

33- One of the following is a suicide inhibitor

A –Penicillin

B-Malathion

C-Parathion

D-Sarin

E-Aspirin

34- Suicide inhibits are all of the following EXCEPT:

A -They are drugs that inhibit vital enzymes and are used in suicide attempts ofpeople

B- They irreversibly bind to the active sites of enzymes

C- They undergo partial reaction by enzymes

D- Their structure is similar to the structure of substrate

E- Their structure is similar to the structure of transition states

35- One of the following is NOT true in regard to rate-limiting reactions?

A.They are reversible.

B.They are driven by highly regulated enzymes.

C.They are driven by consuming energy.

d. They are slow reactions.

e. They are driven by enzymes with relatively low affinity to their substrates.

36- One of the following is NOT true in regard to small monomeric G proteins:

A.They are active when GTP replaces GDP

B.GTP-exchange factors activate the proteins.

C.GTPase activating proteins inhibit these proteins.

D.GDP dissociation inhibitors are activators of the proteins.

E.They get inactivated when GTP is released and replaced by GDP

37- An enzyme inhibitor binds to a regulatory site and alters the active site preventing thesubstrate from binding. What is true about this inhibitor?

A.It decreases both Km and Vmax.

B.It is a non-competitive inhibitor.

C.It increases Km and decreases Vmax.

D.It is a suicide inhibitor.

E.It is an uncompetitive inhibitor.

38- The phosphate groups of thiamin pyrophosphate and ATP requires this to bind to activesites of enzymes:

A.They do not need a mediator

.B.Coenzyme A

C.Zinc ion

D.FADH2 or NADH

E.Magnesium ion

30	31	32	33	34	35	36	37	38
C	A	D	A	D	A	E	B	E

protein Purification

Q.10.In anion exchange chromatography

1.The column contains negatively charged beads where positively charged protein binds.

2. The column contains positively charged beads where negatively charged protein binds.

3.It contains both negatively charged beads and positively charged beads where protein bind on their net charge.

4.All of above

1-

Q.11.In cation exchange chromatography

1.The column contains negatively charged beads where positively charged protein binds.

2. The column contains positively charged beads where negatively charged protein binds.

3.It contains both negatively charged beads and positively charged beads where protein bind on their net charge.

4.All of above

2-

Starting from a crude sample, you have purified an enzyme using dialysis. Upon running SDS-PAGE electrophoresis, there were 2 bands; one at 70 KDa and the other is at 10 KDa. Under reducing conditions, there were also two bands, one at 35 KDa and the other at 10 KDa. What does that tell you about the structure of the enzyme?

a.The enzyme might be a homodimer

b.The enzyme might be a heterotetramer

c.The enzyme might be composed of a single subunit of 80 Kda

d.The enzyme might be a heterotrimer

e.The enzyme might be composed of a single subunit of 70 KDa

3-

4- Theoretically, sickled hemoglobin, compared to normal hemoglobin, is characterized by (choose the best answer):

a.Can be separated from normal hemoglobin using dialysis

b.Can be separated from normal hemoglobin using affinity chromatography

c.Having a different isoelectric point

d.Lower affinity towards other sickled hemoglobin moleculesed

e.Different banding pattern for all bands in SDS-PAGE electrophoresis

5- You have the following sequence of a peptide "Arg-Leu-Asp-Lys-Arg-Cys-Trp-Tyr-Lys-Arg". After treating this peptide with pepsin, how many peptide fragments would be generated?

a.1

b.4

c.3

d.2

e.Cannot be guessed

6- This technique is NOT dependent on size of molecules

.A.Polyacrylamide gel electrophoresis

b. Dialysis

C.Two-dimensional gel electrophoresis

D.Isoelectric focusing

E.Gel filtration chromatography

1	2	3	4	5	6
2 B	1A	D	E	D	E

7- NOT away of homogenization ?

A. Grinding
B. Potter– Elvejhem homogenizer
C. centrifugation
D. freezing and thawing
E. detergents

8- Not true about Salting in & out ?

A. Depending on the solubility of protein
B. Ammonium sulfate is the most common reagent
C. pure results and expensive way
D. Precipitation of protein

9- Not true about Dialysis ?

A. Crude
B. Easy
C. Principle of diffusion is solubility
D. Need membrane

10- All are false about Chromatography except ?

A. Greek chroma, “to write ,”
B. cation-exchange resin is usually bound to cl
C. The bound protein can be eluted by adding high conc. of the soluble ligand
D. Products of Affinity chromatography are crude

11- Which way is based on all of protein charge, shape, and size ?

A. Affinity chromatography
B. Dialysis
C. Salting in & out
D. Electrophoresis
E. Ion-exchange chromatography

12- The incorrect one ?

A. SDS completely denatures proteins
B. Acrylamide without the SDS is native gel
C. Proteins have different isoelectric points
D. Acrylamide offers lower resistance to large molecules
E. most common medium for Electrophoresis is a polymer of agarose or acrylamide

13- Order the steps in Protein sequencing - Edman Method Procedure ?

A. heating + HCl--- Separation--- utilizes(PITC)
B. utilizes(PITC)---- heating + HCl---- Separation
C. Separation---- utilizes(PITC)---- heating + HCl
D. None is related

7	8	9	10	11	12	13
C	C	C	C	D	D	B

14- THE INCORRECT ONE IS ?

A. Aminopeptidases that cleave at the N-terminus
B. Trypsin that cleave at the N-terminus
C. Chymotrypsin that cleave at the C-terminus
D. Pepsin that cleave at the N-terminus
E. Carboxypeptidases that cleave at the C-terminus

15- X-ray crystallography IS ?

A. uses a perfect crystal
B. information is extracted by Fourier series
C. Series of patterns taken at different angles
D. High resolution method to determine 3˚
E. ALL OF ABOVE

16- ALL ARE TRUE ABOUT 2-D Nuclear magnetic resonance EXCEPT ?

A. can be done on protein samples in aqueous solution
B. Determines solution structure
C. determining distances between nuclei that aid in structure determination
D. Results are dependent of X-ray crystallography
E. information is extracted by Fourier series

14	15	16
B	E	D

 # يعطيكم العافية و فالكم الفل

دفعة-القدس#