Biochemistry final exam

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Q1/GAGs are

a-positively charged

b-connected to large protein structures

c-have sulphate group

d-homopolysacharides

e-more hydrophobic than other sugars

Q2/fats are stored in adipose tissue as

a-phospholipids

b-sphingolipids

c-fatty acids

d-phosphoglycerols

e-TAG

Q3/a person had a surgery to remove his upper gastrointestinal tract. After the surgery his blood pH was 7.55 and HCO3=40 mM and PCO2= 52…. His condition is

a-metabolic acidosis

b-respiratory acidosis

c-metabolic alkalosis

d-respiratory alkalosis

e-none of the above

Q4/ a drug which is a weak base of pKa= 5.6 contains an amino group in its structure. The stomach juice pH= 1.5 and intestine pH= 6. which of the following is true regarding its absorption by membranes of gastric cells or intestine cells?

a-it will absorbed only in the stomach

b-it will be absorbed only in the intestine

c-it will not be absorbed by neither one

d-it will be absorbed by stomach and intestine at equal rates

e-its absorption does not depend on surrounding pH

Q5/ scurvy is a deficiency in

a-prolyl hydroxylase

b-proline hydroxylation

c-lysine residues

Q6/ keratin is unique from collagen and elastin in

a-being globular

b-having numerous cysteine residues

c-no need for cross linking

Q7/collagen is different from elastin in all of the following EXCEPT

a-glycosylation

b-presence of proline

c-having obvious secondary structure

d-oxidation of lysine

e-cross linking of monomers

Q8/ one of the following is false regarding oxygen binding to heme of Hb

a-the proximal his moves closer to heme

b-non covalent interactions between subunits is broken

c-iron is oxidized

d-the tertiary structure of subunit is altered

Q9/ best definition of carbohydrates is

a-polyhydroxy aldehydes

b-polyhydroxy ketones

c-polyhydroxy carboxylic acids

d-A or B

e-A or C

Q10/ which of the following is false regarding active sites of enzymes

a-they are constituted from amino acids that are far from each other in the primary structure

b-the amino acids that make the active site are small group compared to the whole protein

c-it must bind to 3 sites with substrate and this gives it stereospecificity

d-catalysis is made through non covalent interactions

e-it is internal in the protein's tertiary structure

Q11/affinity between oxygen or CO and heme is weakened through

a-electrostatic repulsion

b-distal his

Q12/protein kinase a is activated through

a-phosphorylation

b-dissociation of the quaternary structure all together

c-binding of AMP

d- converting from T to R

Q13/glycogen phosphorylase can be converted from a to b through

a-binding of activator

b-dephosphorylation

c-binding of inhibitor

Q14/what is sequence of elution of (lys-his-arg) in a cationic exchange chromatography made at pH =6

a-His-Arg-Lys

b-His-Lys-Arg

c-Lys-His-Arg

d-Arg-His-Lys

e-Lys-Arg-his

Q15/ what is wrong regarding immunoglobulins

a- have motifs to help bind to other molecules

b-can be used to detect antigens

c-have disulfide bonds

d-lipoproteins

e-have quaternary structure

Q 16/ the problem with misfolded proteins is that

a-they lose their function

b-they aggregate

Q 17/ find the tetrapeptides sequence that has those amino acids: gly glu arg phe, and that is: cut into 1 negatively charged aa and a tripeptide by trypsin, cut into 2 dipeptides by chymotrypsin, cut into one aa and a tripeptide by elastase

Q 18/ Which of the following sequences can't form beta sheet ??
a- gly-lys-arg-leu-his
b- pro-tyr-pro-his-arg

c-lys-pro-glu-his-gly

d-ile-val-gly-lys-asp

Q 19/ Vitamin D3. all of the following is false except:
-a-Reduces ca++ absorption
- b-has 3 isoprenes
- c-has 2 oh groups
-d-activated by hydroxylation in liver and kidney
e-Degrades under UV light

Q 20/ Which of the following is not oxidoreductase

a-oxygenase

b-peroxidase

c-aldolase

d-dehydrogenase

e-oxidase

Q 21/ What's wrong about LDH:

a-LDH1/LDH2 normally is less than 1

b-there are 5 isozymes

c- all LDH isozymes catalyse the same reactions

d-it's a tetramer

Q 22/ Glutathione is a tripeptide of (gamma glu-cys-gly). what is the indication of gamma?

a-It's the third number in Greek and glu have 3 carbons

b-Glu is connected to cys through its amino group on gamma carbon

c-Glu is connected to cys through its carboxyl on its gamma carbon

d-Glu is connected to both cys and gly through its gamma carbon

Q 23/ which of the following can be a model of a ligase enzymatic reaction

a- X + Y + H2O2→ X-Y + H2O

B- X+Y + H2O→ X-Y

C- X+ Y + ATP→ X-Y-P + ADP

D- X + Y + ATP→ X-Y + ADP + Pi

E- X-Y→X + Y

Q 24/function of Mg+2 in pyruvate dehydrogenase is

a- Binding to substrate covalently
b- Binding to pyrophosphate
c- Binding of cofactor to substrate

Q 25/ CPK-MB is a good indicator of re-infarction incidences due to

b- Found in a lot of tissues
c- It stays up for a long time before declining
d- It declines fast after raising after the first infarction
e- It raises in the first hours after infarction and stays up for a week

Q 26/ If we used 1mg of an enzyme and a saturating amount of substrate and it gives products within 3min of 360mM. What will the value of Vmax(mM/min) be when increasing the [E] to 3mg and keeping a saturating level of the substrate?

a- 120 mM/min
b- 360 mM/min
c- 240 mM/min
d- 180 mM/min
e- 480 mM/min

Q 27/ if we have a mechalis-menten enzyme and [s] = 3KM. what is v/vmax?

a-0.75

b-0.25

c-1

d-1.25

e-0.5

Q28 / what doesn't cause protein denaturation?

a-heat

b-Acidic/ basic solutions

c-reducing agent like beta-mercaptoethanol

d-hydrogen bond breaking solution

e-detergents

Q29 / A Lineweaver-Burk graph. the plot intercept y at 0.4 and with x at -2
Find the Vmax
a- 2

b- 0.4

c-2.5

d- 0.5

Q30 / (not exact numbers of the original question). you have enzymes A, B AND C when put with a substrate S. what is the correct statement?

Enzyme	A	B	C
Km	0.06	0.1	0.015
K cat	2	3	5

a- Enzyme B has highest affinity
b- Enzyme A has best catalytic efficiency
c- Enzyme C has highest specificity constant
d- All enzymes have same v max

Q31 / Salting out is a result of

a-electrostatic interaction

b-hydrophobic interactions

c-Van Der Waal interactions

d-covalent links between proteins

Q32 / Zymogens are activated through

a- Phosphorylation
b- Converting from T to R
c- Allosteric activators
d- Proteolytic cleavage

Q33 / An enzyme has KM for the substrate S = 10.and Vmax of 1nM of the enzyme =5X10^-6μM/L.s. If [S] equals 10 mM. what is K cat?

a-2500M/s

b-500M/s

c-5000M/s

d-5000per s

e-2500per s

Q34 / Oxytocin and tyrocidine have what in common:

a-both are cyclic peptides

b-They have disulfide bridge

c-Have d and L amino acids

d-Have unusual amino acids like Orn

e-Have methylated end

Q 35/ Eicosanoids are made from

a-arachidic acid

b-palmitic acid

c-linoleic acid

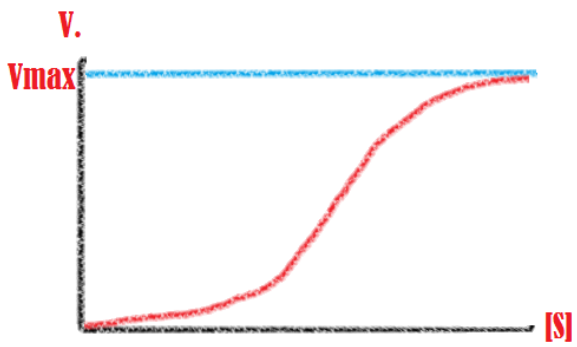
d-Myristic acid

e-Arachidonic acid

Q36 / Peptide bonds cannot rotate because of

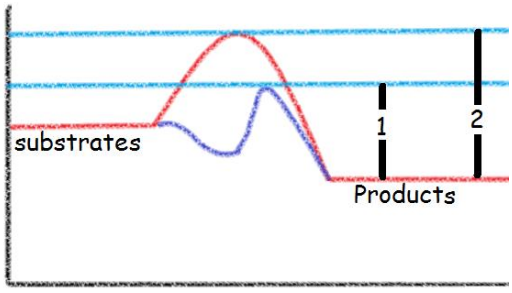
a- They are planar
b- They are trans
c- They have double bond character (resonance)
d- They are charged

Q37 / which of the following information can NOT be known from this graph representing an enzyme catalysed reaction:



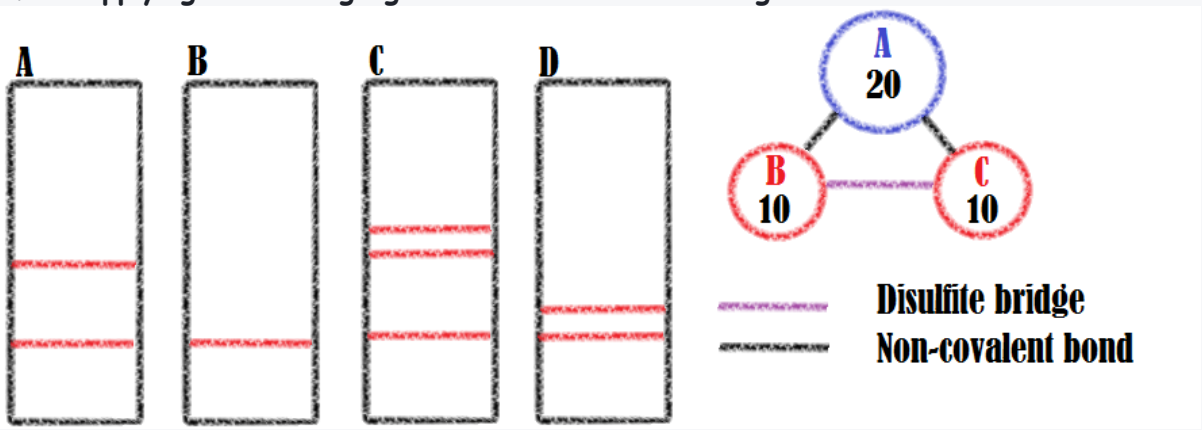
a- It is allosteric
b- It has more than one subunit
c- The line is sigmoidal
d- It is conjugated

Q38 / one of these is true about the graph representing an enzyme catalysed reaction (blue line) and non-catalysed reaction (red line):

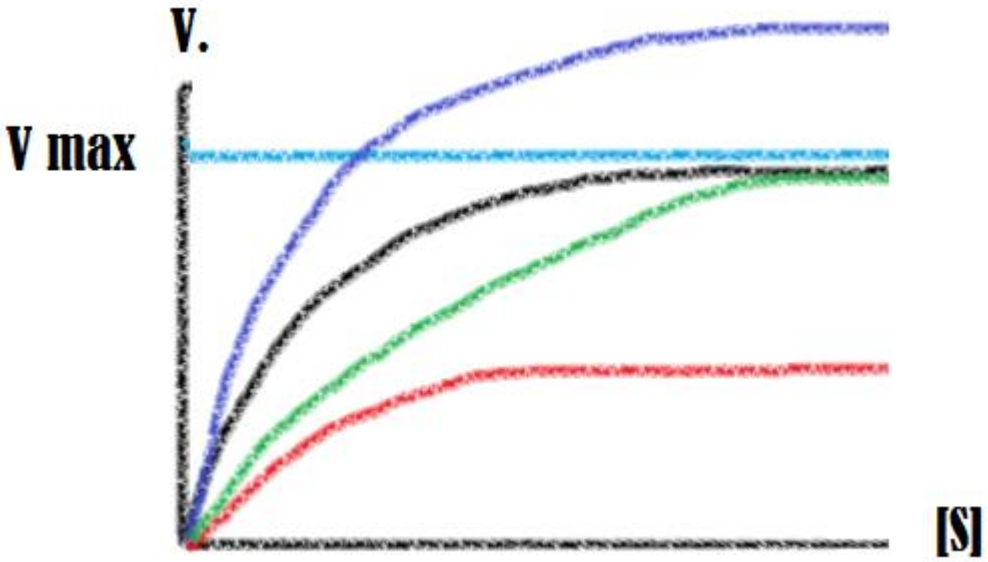


a- The reaction is exergonic
b- It has one transitional state
c- (1) represent the activation energy for the forward reaction
d- (2) represent Delta G

Q39 / how will this protein (contains three subunits: A, B and C) appear in bands after applying a reducing agent and a denaturation agent:



Q40 / the black line represents an enzyme catalysed reaction in its original state,



which of these is true:

a- The green line can result from irreversible inhibitor
b- Km for the blue line is deferent from the original black line
c- The red line can result from reversible inhibitor
d- The red line can result from less enzyme concentration

1.	B
2.	E
3.	C (not sure)
4.	B (I guess, because it it’s closer to not having a charge on the drug so it will cross the membrane easily)
5.	B (because the enzyme is intact and present but deficiency in Vitamin C)
6.	B
7.	C (the question wants the similarity)
8.	C (not sure)
9.	D
10.	D (binding is noncovalent…catalysis can be covalent. e.g. Serine proteases)
11.	B
12.	B
13.	B
14.	D
15.	D
16.	B (not sure)
17.	gly-phe-arg-glu
18.	B (not sure…. because it has 2 pro)
19.	D
20.	C
21.	C
22.	C
23.	D
24.	B
25.	D
26.	B (V max in first trial = 360/3= 120…when [E2] = 3 x [E1] then Vmax 2=Vmax1x3)
27.	A
28.	C
29.	C
30.	C
31.	B
32.	D
33.	D
34.	A
35.	E
36.	C
37.	D
38.	A
39.	A
40.	D

Sorry for any mistakes