Joash
EMPIRE

Biochemistry Revision Papers.

90

SEPTEMBER 2015 CLASS

BIOCHEMISTRY

Instructions.

Examination policy apply.

SECTION A: MCQS

1. Water polarity is determined by:
   a) Hydrogen atoms.
   b) Oxygen atoms
   c) . Covalent bonds between oxygenated hydrogen atoms.
   d) Cohesion forces of the water molecules.

2. High melting point of water is due to
   a) Oxygen bonds
   b) Hydrogen bonds.
   c) Liquid nature.
   d) Condensations properties.

3. Role of water in our bodies doesn't include the following;
   a) Cellular exchange and processes media.
   b) Enzyme activity. (H_2O)
   c) Folding of biomolecules.
   d) Protein synthesis.

4. DNA role include
   a) Regulates metabolic processes.
   b) Information transfer during cell division.
   c) Nervous system regulation.
   d) Immune system regulation.

5. Sodium is involved in the following except.

a) Body fluid volume regulation.

b) Influences intracellular fluid volume

c) Impulse transmission.

d) Regulates heart compaction.

6. Low sodium levels is clinically known as

a) Hypokalaemia

b) Hypolemia

c) Hyponatremia

d) Hyperlepemia.

7. Low serum sodium can be due to

a) Post operative state

b) Liver failure

c) Cardiac failure

d) High sodium intake.

8. Calcium is key in the following functions, which one is not.

a) Nerve impulse transmissions.

b) Boney tissue integrity.

c) Vitamin B_{12} absorption.

d) Regulates enzyme activities.

9. Folic acid deficiency can lead to

a) Increased iron absorption

b) Reduced iron absorption.

c) Doesn't affect RBC synthesis.

d) Neural tube defect in new born.

10. Vitamin C does the following;

a) Increases / improves iron absorption.

b) Biosynthesis of tyrosine.

c) Bone demineralization.

d) Bile acid degradation.

11. Vitamin K.

a) Is synthesized by intestinal bacteria.

b) It is water soluble.

c) It is synthesized in the liver.

d) Only acquired through dietery intake.

12. Essential, amino acids.

a) Are synthesized in the body.

b) Are not synthesized in the body.

c) Are only available from plant sources.

d) Cannot be degraded.

13. Proteins are soluble in

a) Fats

b) Water

c) Organic solvents

d) Essential components.

14. Albumins are found in

a) Beef

b) Legumes

c) Eggs

d) Green leafy vegetables.

15. Globular proteins are

a) Coiled cross linked polypeptide.

b) Insoluble in water

c) Readily digested by enzymes.

d) Only found in diet.

16. Protein functions does not include the following;

a) Enzyme synthesis.

b) Regulations

c) Structural integrity

d) Metabolic pathways control

17. Glycolysis is

a) Oxidation of polysaccharides.

b) Oxidation of glucose or glycogen.

c) Reduction of glucose or glycogen

d) Gastric metabolism of carbohydrates.

18. Conversion of glucose 6 – phosphate to fluctose 6 – phosphate is to;

a) Forming symmetrical molecule for easy enzyme action.

b) Improve cellular uptake.

c) Improve the amount of ATP produced.

d) Reduce amount of energy required for processes.

19. What is the role of NADH during glycolysis

a) Electron donor

b) Electron acceptor

c) Core substrate for energy generation.

d) Condensation agent.

SECTION B: TRUE FALSE

Note: you gain a mark for every correct choice and loose one mark for every wrong choice in this part.

1. Function of glycosammogylycans(GAGS) include;

T a) Body's ground substance building blocks.

T b) Supports fibrous component of tissue.

T c) Key in protein synthesis

T d) Regulates metabolic pathways.

T e) Key source of energy.

2. Carbohydrates digestion.

T a) Begins in the mouth.

T b) Pancreatic amylase plays key role in splitting carbohydrates.

T c) A PH level is key in metabolism.

F d) They are poorly absorbed in basic media.

e) Always requires carrier to be absorbed.

3. Mechanisms of absorption of carbohydrates include;

T a) Simple diffusion.

T b) Active transport.

F c) Osmosis.

F d) Exudation.

F e) Diapedesis.

4. Lactose is mainly found in

F a) Sugarcane.

F b) Fruits.

T c) Milk

F d) Plant starch.

F e) Honey

5. Lipids functions include;

a) Thermal insulation

b) Hormone precursor.

c) Vitamin solvents

d) Enzyme precursors.

e) Nervous system function.

6. Co – enzymes.

a) Are vitamin derivatives.

b) Enzymes cannot function without them.

c) The take part in the reactions and undergoes permanent change.

d) NAD is one of the most common .

e) Are protein derivatives.

7. Isozymes.

a) Acts on the same substrate.

b) Haves common site of origin.

c) Have different site of origin.

d) Common site of origin but act on different substrate.

e) Originate at different site but act on the same site.

8. Lyases acts by

a) Hydrolysis

b) Hydrogenations.

c) Removal of groups by other mechanism other than hydrolysis.

d) Are bond specific

e) Act well in acidic pH.

9. Enzyme activity can be affected by

F a) Type of the substrates

T b) Temperature

T c) pH

T d) Enzyme / substrate concentration.

F e) Genetic makeup.

10. Enzyme inhibition can be;

F a) Due to drugs.

F b) By fellow enzymes.

T c) Irreversible.

T d) Reversible.

e) Due to genetic makeup.

11. Protein synthesis occurs in

T a) Ribosomes.

F b) Mitochondria

F c) Golgi apparatus.

T d) Endoplasmic reticulum

F e) Lysosome.

12. Translation of during protein synthesis involves

F a) Activation

T b) Initiation

T c) Elongation

T d) Termination

F e) Copying.

13. In amino acids degradation there is

a) Creation of carbon skeletons used in krebs cycle.

b) Deamination as a major process.

c) Urea formation as a byproduct.

d) Occurs in the liver

e) conjugation.

14. Deamination of amino acids is through

a) Oxidation

b) Dehydration

c) Condensation

d) Dehydrogenation.

e) Reduction.

15. Complex biomolecules include;

a) DNA

b) RNA

c) Proteins

d) Carbohydrates

e) Lipids.

16. Cell membranes functions include;

a) Transport

b) Receptor site

c) Metabolic site

d) Barrier

e) Structure integrity.

17. Carbohydrates role includes

a) Energy

b) Structural role

c) Cell surface information -- molecules

d) Osmotic pressure regulation

e) Immune system player.

18. Carbohydrates are

a) Carbon components

b) Have hydroxyl groups.

c) Excess are stored as fats.

d) Key in hormone synthesis

e) Key in immune system.

19. Roles of biochemistry include

a) Medicine synthesis / development.

b) Diagnostic (clinical).

c) Nutritional interventions.

d) Use in disease studies

e) Provide basis for Drugs development

20. properties of denatured protein include

a) increased number of reactive and functional group

b) Reduced solubility

c) Configurationally altered

d) Prone to proteaolytic enzyme attack

e) They have increased biological activities

Biochemistry 14/07/2015

AM NO:D/CM/JULY-FQE/014/160101020 KMTC/QP-08/EAB

Biochemistry KENYA MEDICAL TRAINING COLLEGE

culty of Clinical Sciences Department of Clinical Medicine

14/2015 Academic Year Final Qualifying Examinations (July 2015)

DULE..... Date:.....

TOTAL SCORE 41 /60

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQS) – 30% SCORE 24 /30

Q1	
a	
b	
c	✓
d	

Q2	
a	
b	✗
c	
d	

Q3	
a	
b	
c	
d	✓

Q4	
a	
b	✗
c	
d	

Q5	
a	
b	
c	
d	✓

Q6	
a	
b	
c	✗
d	

Q7	
a	✗
b	
c	
d	

Q8	
a	
b	
c	
d	✗

Q9	
a	
b	✗
c	
d	

Q10	
a	
b	
c	
d	

Q11	
a	✗
b	
c	
d	

Q12	
a	
b	✗
c	
d	

Q13	
a	
b	✗
c	
d	

Q14	
a	
b	
c	
d	✗

Q15	
a	
b	
c	✗
d	

Q16	
a	
b	
c	✗
d	✓

Q17	
a	
b	✓
c	
d	

Q18	
a	
b	
c	✗
d	

Q19	
a	
b	
c	✗
d	

Q20	
a	
b	
c	
d	

Q21	
a	
b	
c	
d	

Q22	
a	
b	
c	
d	

Q23	
a	
b	
c	
d	

Q24	
a	
b	
c	
d	

Q25	
a	
b	
c	
d	

Q26	
a	
b	

Q27	
a	
b	

Q28	
a	
b	
c	

Q29	
a	
b	

Q30	
a	
b	
c	

EXAM NO:D/CM/JULY FOE/014/..... KMTC/QP 08/EAB

SECTION 6: TRUE-FALSE - 30% SCORE ...../150 SCORE 17/30

01	T	F
a	X	
b	X	
c	X	
d	X	
e	X	

02	T	F
a	X	
b	X	
c	X	
d		X
e		

03	T	F
a	X	
b	X	
c		X
d		X
e		X

04	T	F
a		X
b		X
c	X	
d		X
e		X

05	T	F
a	X	
b	X	
c	X	
d		X
e	X	

06	T	F
a		X
b		X
c	X	
d	X	
e	X	

07	T	F
a		X
b	X	
c		X
d	X	
e		X

08	T	F
a	X	
b		
c		X
d		X
e		

09	T	F
a		X
b	X	
c	X	
d	X	
e		X

10	T	F
a		X
b		X
c	X	
d	X	
e		X

11	T	F
a	X	
b		X
c		X
d	X	
e		X

12	T	F
a		X
b	X	
c	X	
d	X	
e		X

13	T	F
a		
b		
c		
d		
e		

14	T	F
a	X	
b	X	
c		
d	X	
e	X	

15	T	F
a		X
b		X
c	X	
d	X	
e	X	

16	T	F
a		X
b		X
c	X	
d	X	
e		X

17	T	F
a	X	
b	X	
c	X	
d	X	
e	X	

18	T	F
a	X	
b	X	
c		X
d		X
e	X	

19	T	F
a	X	
b		
c	X	
d	X	
e	X	

20	T	F
a		X
b	X	
c	X	
d	X	
e		X

21	T	F
a		
b		
c		
d		
e		

63
29
14

22	T	F
a		
b		
c		
d		
e		

23	T	F
a		
b		
c		
d		
e		

24	T	F
a		
b		
c		
d		
e		

25	T	F
a		
b		
c		
d		
e		

26	T	F
a		
b		
c		
d		
e		

27	T	F
a		
b		
c		
d		
e		

28	T	F
a		
b		
c		
d		
e		

29	T	F
a		
b		
c		
d		
e		

30	T	F
a		
b		
c		
d		
e		

BIOCHEMISTRY SEPT 2015 CLASS
SECTION A MCQS

1. The following is a role / function of cell membrane
   a) Serves as a barrier
   b) Transport of substances across in and out of the cell
   c) Receptor site
   d) Metabolic site

2. Biochemistry plays the following roles which one does not
   a) Discovery of new drugs
   b) Diseases process in human body
   c) Understand more about nutrition
   d) Understand more on the spread of diseases

3. Which one is a component of the cell membrane:-
   a) Estrodiol
   b) Coenzyme A
   c) Phospholipids
   d) oligosaccharides

4. DNA bases include the following which one is not
   a) Glamine
   b) Thymine
   c) Uracil
   d) Adenine

5. Properties of water of biological importance include the following. Which one is not?
   a) Is a medium of ionization and waste chemical removal
   b) Possesses high latent heath of evaporation
   c) Dissolves lipids and glycerides
   d) Universal solvent

6. Which of following chemical reaction does not take place in living matter
   a) Hydrolysis
   b) reduction
   c) Oxidation
   d) Condensation

7. Body fluid compartments include
   a) Cerebra spinal
   b) Arachnoid

c) Intracellular
d) subdural

8. Fluid movement a cross-compartments can be through the following mechanisms.which one is not
a) Penetration
b) Diffusion
c) Osmosis
d) Filtration

9. Which one of the following is not a body electrolyte
a) Bicarbonate ions
b) Phosphate ions
c) Magnesium ions
d) Beryllium ions

10. The role of electrolytes include the following except?
a) Water distribution between fluid compartments
b) Maintain of motor function
c) Smooth muscles contraction
d) Control metabolism

11. Metal ions in enzymes forms
a) Strong and difficult complexes
b) Loose and easily dissociable complexes
c) Form non dissociable complexes
d) irreversible reactions and complexes

12. Enzymes properties include
a) Specificity
b) Mainly work as an activator
c) mainly found in vegetable
d) do denature with exposure to high temperature

13. Enzyme specify can include
a) Bond specificity
b) Cleft specificity
c) Color specificity
d) Disease specificity

14. iso enzymes are
a) Originated from similar structure
b) Originated from different structure

c) Perform different function
d) Structurally are different

15. Which one is not a clan of enzymes
a) Co-enzyme
b) oxidoreductases
c) Lyases
d) Ligases

16. Enzymes mechanism of action is by
a) Lock and key
b) Surface tension
c) Chemical reaction
d) Tensile force generation

17. Extreme PH can
a) Increase enzymes activity
b) Denature enzymes
c) Stabilize enzyme activity
d) Activate enzymes

18. The main role of vitamins in our body is
a) Cell delusion
b) Growth
c) Metabolism
d) Bone healing

Metabolism – vitamins

19. Sodium ion regulates
a) Intracellular volume off body fluids
b) Extracellular volume of body fluids
c) Synovial fluid volume
d) Wound healing

20. Sodium reabsorption in the body is structured by
a. cortisol
b) Aldosterone
c) Estradiol
d) Adrenaline

SECTION B TRUE FALSE

1 nucleic acid is made up of a
a) Sulphate F
b) A base T
c) A sugar (ribose) T
d) A phosphate T
e) A methyl F

2. DNA is made up of the following bases
a) Uracil F
b) Adenine T
c) Cytosine T
d) Methanol F
e) Thiamine T

3. In covalent bonds
a) Electrons are shared
b) Protons are transferred
c) Only found in hydrogen bonds
d) Only occurs in carbon bonds
e) Cannot be broken down

4. Molecular component of cell membrane include
a) Minerals
b) Proteins
c) Polar lipids
d) Carbohydrates
e) Apo enzymes

5. Carbohydrates are present in the cell membrane as
a) Oligasacchandes F
b) Glycolipids T
c) Fructose
d) sucrose
e) Glycolipids T

6. across membrane movements of large molecules can be through
a) Endocytosis T Endocytosis
b) Diffusion Phagocytosis
c) Active transport
d) Phagocytosis
e) Filtration

7. Water soluble vitamins include
a) Vitamin B12
b) Vitamin K
c) Vitamin C
d) Vitamin D
e) Vitamin B6

8. Vitamin B1 deficiency can lead to
a) Beriberi
b) Arthritis
c) Cardivascular disorder
d) Anaemia
e) Pneumonia

9. Folic acid deficiency can be due to
a) Mal absorption
b) Impaired metabolism
c) Increased demand as in pregnancy
d) Chronic infections
e) Altered mental state.

10. Vitamin C is
a) Water soluble
b) Fat soluble
c) Key in collagen biosyntesis.
d) Key in nervous regeneration
e) Bile acid synthesis

11. Cell membrane functions include
a) Barrier function
b) Enzymes site,
c) Receptor site
d) Metabolism site
e) Storage site

12. Translation during protein synthesis includes
a) Initiation
b) Elongation
c) Termination
d) Endocytosis
e) Mutation

13. Enzymes function is determined by
a) PH
b) Temperature
c) Genetic make up
d) Amount of water present
e) Disease process

14. Metal ions promote enzymes function by
a) Producing the active structural conformation of the enzymes
b) Promoting the formation of the enzyme- substrate complex
c) Acting as electron donor or acceptor
d) Acting as a pseudo-substrate
e) Generating energy

15. Properties of enzymes include
a) Contains motility features
b) Some have substrate specificity
c) Have high efficiency
d) Their function cannot be regulated
e) Can sometimes take part in the reaction

16. Zymogens include
a) Insulin
b) Pepsinogen
c) Trypsinogen
d) Dehydrogenase
e) Lyases

17. Enzyme activity depends in
a) Substrate and enzyme Concentration
b) PH
c) Active site presence / size
d) Body postures
e) Physical activity

18. Enzymes in clinical diagnosis includes
a) Lipases
b) Alkaline phosphates
c) Pepsinogen
d) Transaminases
e) Keratogenases

19. Potassium ions have the following roles in human body
a) regulation of extracellular fluid volume
b) regulation of acid base balance
c) metabolism of biomolecules
d) Help in collagen synthesis
e) Key in nerves impulses transport

20. Causes of Hypernatremia include
a) Fluid deficit
b) Perenteral sodium admnistration.
c) Malabsorption
d) Constipation
e) Diarhea and fluid loss

D/Cm/1606/020 (C)

(Biochemistry)

XAM NO:D/CM/JULY-FQE/014/..........................

KMTC/QP-08/EAB

KENYA MEDICAL TRAINING COLLEGE

Faculty of Clinical Sciences

2014/2015 Academic Year

Department of Clinical Medicine

Final Qualifying Examinations (July 2015)

TOTAL SCORE 33 .../60

MODULE:...................................... Date:........................

SECTION A: MULTIPLE CHOICE QUESTIONS (MCQS) – 30% SCORE..20.....30

	Q1	Q2	Q3	Q4	Q5
a					
b					
c	x		x	x	x
d		x			

	Q6	Q7	Q8	Q9	Q10
a			x		
b				x	
c		x			
d	x				x

	Q11	Q12	Q13	Q14	Q15
a				x	x
b	x		x		
c					
d		x			

	Q16	Q17	Q18	Q19	Q20
a	x		x		
b		x		x	x
c					
d					

	Q21	Q22	Q23	Q24	Q25
a					
b					
c					
d					

	Q26	Q27	Q28	Q29	Q30
a					
b					
c					

EXAM NO:D/CM/JULY-FQE/014/.....

KMTC/QP-08/EAB

SECTION B: TRUE-FALSE – 30% SCORE ...../150

SCORE ...13...../30

01	T	F
a		✗
b	✗	
c	✗	
d	✗	
e		✗

02	T	F
a		✗
b	✗	
c	✗	
d	✗	
e	✗	

03	T	F
a		
b		
c		
d		
e		

04	T	F
a		✗
b	✗	
c	✗	
d	✗	
e		

05	T	F
a	✗	
b		✗
c		✗
d		✗
e		✗

06	T	F
a		✗
b		✗
c		✗
d	✗	
e		✗

07	T	F
a	✗	
b		✗
c	✗	
d		✗
e	✗	

08	T	F
a	✗	
b		✗
c		✗
d		✗
e		✗

09	T	F
a		
b		
c		
d		
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10	T	F
a	✗	
b		✗
c		
d		
e		

11	T	F
a	✗	
b	✗	
c	✗	
d	✗	
e		✗

12	T	F
a	✗	
b	✗	
c	✗	
d		✗
e	✗	

13	T	F
a	✗	
b	✗	
c		✗
d		✗
e		✗

14	T	F
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b		
c	✗	
d		
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15	T	F
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b	✗	
c		
d		
e		

16	T	F
a	✗	
b	✗	
c	✗	
d	✗	
e		✗

17	T	F
a	✗	
b	✗	
c	✗	
d		✗
e		✗

18	T	F
a		
b		
c		
d		
e		

19	T	F
a		✗
b	✗	
c	✗	
d	✗	
e	✗	

20	T	F
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b		
c	✗	
d		
e		✗

21	T	F
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22	T	F
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d		
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23	T	F
a		
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24	T	F
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25	T	F
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26	T	F
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27	T	F
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28	T	F
a		
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c		
d		
e		

29	T	F
a		
b		
c		
d		
e		

30	T	F
a		
b		
c		
d		
e		

September 2015 Class
Biochemistry

CAT

1. Briefly describe properties of water (3mks)

2. Explain the roles / uses of biochemistry (4mks)

3. Outline any four functions of a cell membrane (4mks)

4. Name the five bases that form/ makes up the DNA and five that forms the RNA (5mks)

5. Briefly describe the four steps during translation (protein synthesis) in the Ribosomes (5mks)

6. a) What is an Enzyme (2mks)

   b) Describe the 2 classes of enzymes based on presence or absence of a non-protein (4mks)

   c) Explain the following properties of enzymes

      i) Active site
      ii) Catalytic efficiency
      iii) Specificity
      iv) Regulation (8mks)

7. With examples list any five classes of enzymes (5mks)

D/cm/16010/020

17/40

1) i) It is a universal solvent.
ii) It is a ~~polt~~ Polar compounds.
iii) Has high latent heat of evaporation.

2

2) i) It explores the structural of our body at molecular level
ii) It explains structural function of the body at its molecular levels
iii) It explains how modern drugs are made
iv)

2

3) i) Acts as a ~~help~~ transporter
ii) Act as an enzyme
iii) It selectively allows in and out movement of materials
iv) It helps in communication of cells ~~to~~ with the neighbouring cells.

2

4) DNA Bases
i) Thymine
ii) Adenine
iii) Cytosine
iv) Guanine

RNA Bases
i) ~~Thymine~~
ii) Adenine
iii) Uracil
iv) Cytosine
v) Guanine

5

5) i) Activation - ~~Transcription is activated~~ Protein synthesis is activated
ii) Initiation - selection of chromosomal codon is initiated

3

iii) Elongation - ~~selected~~ code codon is removed from the rest and placed in a to form a ~~chain~~ chain ~~line~~ line.
iv) ~~Transcription~~

Female

D/CM/17010/310

KENYA MEDICAL TRAINING COLLEGE-MOMBASA

DEPARTMENT OF CLINICAL MEDICINE

BIOCHEMISTRY FIRST SEMESTER CAT

SEPT 2016 CLASS 14/12/2019

TIME: 2.00PM-2.00PM

INSTRUCTIONS: ANSWER ALL QUESTIONS

1. State and explain any 5 application of biochemistry (5 marks)
2. What is an enzyme (2 marks)
3. State and explain properties of enzymes (10 marks).
4. What is a co – enzyme (3 marks).

22/10

1 Application of biochemistry

a) Medical field - biochemistry is used to study normal and abnormal state of the body which forms a basis of diagnosis

b) genetics - biochemistry help us understand how genetic diseases occur.

c) Nutrition - biochemistry help us improve our nutrition for a healthier life

d) Agriculture - biochemistry help us improve yields on production.

e) pharmacology - biochemistry help us to come up with drugs to cure various illness.

2 Enzyme

Enzyme is a protein catalyst in biological reactions

3) Properties of enzymes

a) Active sites - enzymes have special clefts made of amino acids forming a structure complementary to substrate enzymes binds to substrate through the active sites.

b) Specificity - Enzymes only act on specific substrate Types of specificity include absolute specificity bond specificity & group specificity where substrate act on specific bond while absolute specificity is where enzyme act on specific substrate.

c) Regulation enzymes are regulated in the body may be regulated by activation when needed, inhibition of its action by product or enzyme being released in inactive form and activated when needed or at point of action.

Dlcm/17010/210

d) Zymogens. Some enzymes such as pepsinogen are produced in inactive forms and when they reach the part of action they are activated eg into pepsin.

e) Isoenzymes - are enzymes which catalyse the substrate in the same way leading to formation of similar products ~~but come from diff~~ but are produce from different sites having physical and chemical differences.

4) Co-enzyme

Co enzyme is a non protein enzyme made up vitamins which is organic. They work together with enzyme in the following. i) It is a co substrate as anything that happens to substrate is complementary to co enzyme

ii) Co enzyme ~~lead to~~ facilitate transfer of group and receiving of group

iii) Co-enzyme lead to formation of intermediate Enzyme-Substrate

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KENYA MEDICAL TRAINING COLLEGE-MOMBASA CAMPUS

DEPARTMENT OF CLINICAL MEDICINE

END OF SEMESTER ONE EXAMINATION

BIOCHEMISTRY

SEPT 2016 CLASS

41/60

23/30

SECTION A: MCQ ONLY ONE ANSWER IS CORRECT

1. The roles of water in human body include the following which one is not;
   a) Key in enzyme action.
   b) Transportation of solutes
   c) Cell membrane structure
   d) Folding of biomolecule.
2. In covalent bonds
   a) Protons are shared.
   b) Electrons are transferred.
   c) Electron pair is shared.
   d) Provides positive charge.
3. Water high melting point is due to;
   a) Oxygen bond
   b) Hydrogen bonds
   c) Vanderwaals force
   d) Cohesive force.
4. The universal solvent property of water is due to;
   a) Oxygen molecule bond.
   b) Polarity and hydrogen bonds.
   c) High melting point.
   d) Covalent bonds.
5. Vander waals force.
   a) Occurs between 2 charged atoms.
   b) Stronger than hydrogen bond.
   c) Occurs between neutral atoms.
   d) Key in stability of water.
6. Electrolytes are;
   a) Minerals found in the body.
   b) Charged particles dissolved in body fluid.
   c) Positively charged ions found intracellularly.
   d) Nerve impulse.

7. Role of electrolytes doesn't include the following;
   a) Neuromascular transmission.
   b) Body fluid volume and osmolarity maintenance.
   c) Acid base balance regulation.
   d) Inflammatory response.
8. Hyponatremia is ?.
   a) High serum concentration of sodium above normal.
   b) Low serum concentration of sodium below normal levels.
   c) Low level of serum concentration of potassium below
   d) High level of serum concentration of potassium.
9. Key function of sodium ions include
   a) Regulates protein synthesis.
   b) Control and regulates body fluids volume.
   c) Regulates nervous transmission system.
10. The following electrolyte is the chief regulator of enzyme activity
   a) Magnesium
   b) Copper
   c) Sodium
   d) Potassium
11. Which electrolytes utilization is stimulated by vitamin D
   a) Magnesium
   b) Sodium
   c) Potassium
   d) Calcium
12. Key symptoms of hypocalcemia include the following which one is not.
   a) Osteopoposis.
   b) Muscle spasms.
   c) Dysrhythmias
   d) Oliguria & anuria.
13. The following is not a fluid compartment.
   a) Intercellular
   b) Intestinal
   c) Intravascular
   d) Osmotic
14. The following does not constitute part of nucleic acid.
   a) Base
   b) Rebose
   c) Phosphate
   d) Sulphate.
15. The following is not part of DNA

a) Adenine
b) Cytosine
c) Guanine
d) Uracil

16. The main function of smooth endoplasm reticulum include;
a) Transport
b) Carbohydrate metabolism
c) Nucleic acid synthesis
d) ATP synthesis

17. During transcription;
a) Information from messenger RNA is interpreted in the Ribosome.
b) Information is transferred from DNA to RNA.
c) Transfer RNA extracts information from messenger RNA.
d) Uncodoning of final aminoacid chain.

18. Role of protein in the body include;
a) Main source of energy.
b) Insulation and thermal regulation.
c) Acts as a co – enzyme.
d) Provides structural foundation of the body.

19. Fluid movement across compartments is not through the follow;
a) Active transport.
b) Ion diffusion.
c) Filtration
d) Osmosis

SECTION B :TRUE / FALSE RESPOND TO ALL NEGATIVE MARKING IS APPLIED

1. Co – enzymes;
a) Are derivative of vitamins. TRUE
b) They accept or donate group to or froma substrate. TRUE
c) Contain an inorganic component. FALSE
d) Contain an organic component TRUE
e) Only acts on positively charged substrate. FALSE

2. Metal ions in enzymes
a) Form complex strong bonds that do not dissociate easily. TRUE
b) Makes enzymes that can be electron donor or acceptor. TRUE
c) Act by causing distortion in the substrate or the enzyme. TRUE
d) Elevates PH during enzyme activity. FALSE

3. Sodium

a) Participate in generation of nerve impulse. TRUE
b) Chief extra cellular fluid electrolytes TRUE
c) Chief intracellular fluid electrolyte. FALSE
d) Main component in Bones. FALSE
e) Main source is table fact.

4. Magnesium ions functions induce.
   a) Metabolism of carbohydrate
   b) Metabolism of proteins.
   c) DNA synthesis
   d) Maintains intracellular potassium
   e) Electrical activity in nervous tissue.
5. RNA functions include
   a) Carries genetic information from DNA to cytoplasm. TRUE
   b) Carries amino acids from the pool during synthesis.
   c) Links amino acids during protein synthesis.
   d) Regulate protein synthesis
   e) Regulate carbohydrates metabolism
6. Translation processes during protein synthesis include;
   a) Elongation TRUE
   b) Termination TRUE
   c) Initiation TRUE
   d) Transcription FALSE
   e) Activation. TRUE
7. Features of cell membrane include
   a) Are flexible.
   b) Self sealing.
   c) Have constant turnover of protein and lipids.
   d) Can fuse with another membrane without losing integrity.
   e) They are single layered. FALSE
8. Cell membrane carbohydrates are important for;
   a) Cell to cell recognition and distinction.
   b) Key in foreign cells by the immune system
   c) Transport across membranes.
   d) Receptor site attachment.
   e) Structural channels / pores.
9. Enzyme activities can be affected by;
   a) Temperature of 37^0c. FALSE
   b) Substrate concentration. TRUE
   c) Concentration of hydrogen ions. TRUE
   d) Protein synthesis FALSE

e) State of cardiac activity FALSE

10. Enzymes active sites
    a) Some enzyme have more than one active site.
    b) They are in three dimensional structure. TRUE
    c) Consist of amino acid chains. TRUE
    d) Not always complementary with substrates.
    e) Similar in all enzymes.
11. The following is not a property of enzyme.
    a) They are not regulated. TRUE
    b) Specific to substrates. FALSE
    c) Some are produced in inactive form. FALSE
    d) Some although different may act on the same substrate. FALSE
12. Biological importance of water include;
    a) Media for all cellular events.
    b) Aids folding of biomolecules
    c) Transport of solutes.
    d) Nerve impulse transmission.
    e) Immune system.
13. Vanderwaals forces
    a) Occurs between charged atoms.
    b) Only attracts atoms.
    c) Much weaker than hydrogen bonds. TRUE
    d) Occur between two neutral atoms.
    e) Only found in water molecule.
14. Water soluble vitamins.
    a) Includes only the B and C vitamins. TRUE
    b) Have fewer common characteristics apart from solubility in water.
    c) Excess can only be excreted through feces.
    d) They are all synthesized in the body FALSE
    e) Provided through diet. TRUE
15. Thiamine
    a) Main role is decaboxylation of ketoacids.
    b) It is activated by addition of pyrophosphate from ATP. TRUE
    c) It is a co – enzyme in all metabolic processes.
    d) Generates substrates for enzyme reaction.
    e) Have no role in metabolism.
16. Deficiency of Vitamin B1 causes
    a) Malaria FALSE
    b) Beriberi TRUE
    c) Kwashiorkor. FALSE

d) Marasmus FALSE
e) Night blindness. FALSE

17. The following is true about niacin
a) Can be synthesized from the body. TRUE
b) It is a co enzyme of many lyases.
c) It is a co – enzyme of many dehydragenases
d) Main source is synthesis from tryptophan. FALSE
e) Deficiency causes pellagra. TRUE
18. Enzyme specifically can be;
a) Genetic specific. FALSE
b) Absolute specific. TRUE
c) Stereo specificity. TRUE
d) Pheno specificity. FALSE
e) Bond specificity. TRUE
19. Enzyme classification.
a) It is based on genetic makeup. FALSE
b) Based on reaction they catalyze. TRUE
c) Has six classes. TRUE
d) Many done based on the receptor site. FALSE
e) Based on the active size makeup FALSE
20 Biochemistry applications include
a)development of therapeutics and medicine TRUE
b) Medicine to discover certain diseases and their treatment
c) Nutritional development and advancement TRUE
d) Generate basis of occurrence of diseases
e) Used to study communicable disease FALSE

KENYA MEDICAL TRAINING COLLEGE-MOMBASA CAMPUS

DEPARTMENT OF CLINICAL MEDICINE

SECOND SEMESTER CATS

BIOCHEMISTRY

SEPT 2016 CLASS

11/5/2017

ANSWER ALL QUESTIONS

1. What are the physical and chemical properties of carbohydrates molecules (3 mks)

2. Explain any 3 functions of glycosaminoglycans (Gags) (4 mks)

3. What is heparin, and what is the role in human body (3mks)

4. Explain glycolysis and clearly explain the stages involves (15 mks)
5. Explain categories of proteins based on the biological functions. (5mks)

- Essential Proteins
- Non-essential Protes
- Semi-essential Protes.

D1/Civ/17A0/218

5/30

1) Physical and Chemical properties of Carbohydrate molecules
Carbohydrates molecules are made up of hydrogen, Oxygen and Carbon.
Depending on Complexity of Carbohydrate, Carbohydrates which are not very complex dissolve in water while like glucose while Complex carbohydrate like starch do not dissolve in water
Carbohydrates are mainly bonded by glycosidic bonds like α(1,4) glycosidic bond.

1

2) Functions of glycosaminoglycans
1) Participate in gluconeogenesis — How
2) It is a component in the cell membrane
3) Participate in protein Synthesis

1

3) Heparin
Heparin is polysaccharide in the group of heteropolysaccharide
It role is blood clotting as it activates the Coagulation factors in coagulation Pathway — Prevents

1

1

4

3

4 Glycolysis

Glycolysis is the breakdown of glycogen in the body by enzymes to supply the tissue into body with glucose and energy

The body stores glycose in the body in the form of glycogen

liver is one of the organ which stores

glycolysis involve 3 main steps. Steps as below

a) Removal of bonds

Glycogen is made up of various bonds holding different types of monosaccharides firmly in the structure

This stage liberates the bonds making it easier to break down glycogen.

b) Breakdown of chains

Glycogen is made up of long branchy chains of carbon hydrogen and oxygen

In this stage the branching chains is broken down for easier breakdown of glycogen

c) Break down of glycogen

This is the last step of glycolysis. Due to removal of glycosidic bonds and Breakdown of the long chains glycogen is then dissociated into glucose molecule which can be absorbed by body tissue

8) Categories of protens based on biological functs

a) Essential protens
These are protens which are not Syntkessed in the body but required in the body
They are present in milk and eggs and other diets

b) Non-essential protens
Are protens which the body Syntkesises and must no be necessarily provided in the diet

c) Semiessential protens
Are protens which can be Syntkessed in the body but additional is required from the diet

KENYA MEDICAL TRAINING COLLEGE – MOMBASA

DEPARTMENT OF CLINICAL MEDICINE

PROMOTIONAL EXAM

BIOCHEMISTRY

SECOND SEMESTER

SEPTEMBER 2016 RCO CLASS

DATE: 29/6/2017

TIME: 2.00PM-4.00PM

1. Candidates are supposed to be sited
2. 15 minutes before the exam starts.
3. Nobody is allowed to carry notes/books/mobile phones during the examination.

4. Answer all questions indicate whether true or false by putting X on the answer sheet provided.

5. Printed questions are from pages 1-10

SECTION A: MCQ ONLY ONE ANSWER IS CORRECT

1. The following enzyme is key during gastric phase of protein metabolism.
   a) Chylomicron
   b) peptidase
   c) Pepsin
   d) Trypsin
2. Which of the following aids absorption of aminoacids by the intestinal cell?
   a) Magnesium ions
   b) Sodium ions
   c) Calcium ions
   d) Micelles
3. Solubility of organic molecules in water depends on:
   a) Polarity
   b) Temperature
   c) Melting point
   d) Boiling point
4. The following is not true about Deamination
   a) Can take place through dehydration
   b) It is an oxidative process
   c) Results into Keto acids and new amino acids
   d) Enhanced by heating
5. The following is not a role/importance of Transamination
   a) Energy generation
   b) Enhances nitrogen balance and limit loses
   c) Helps in ensuring utilization of excess aminoacids since there s no storage mechanism
   d) It improves aminocids storage
6. Ionic bonds
   a) Are formed between 2 ions by transfer of electrons

b) Formed between bases and acids

c) Formed between acids

d) Between acid and organic compounds

7. Cell membrane carbohydrates has the following role

a) Cell to cell recognition

b) Metabolic role

c) Main component of the cell membrane

d) Main carrier site

8. Sodium ions

a) Is the chief component extracellular fluid

b) Used in nerve impulse transmission

c) Concentration variation has no effects on extra cellular fluid

d) Are negatively charged

9. Potassium ions

a) Main intra cellular cat ion

b) Main extra cellular cat ion

c) It deregulates acid-base balance

d) Excretion is through gastro-intestinal organs

10. Enzyme enhances the overall rate of reaction by

a) Accelerating the ion molecule movement

b) Lowering the free energy of reaction

c) Accepting ions

d) Grouping enzymes

11. Thiamine (vitamin B1)

a) Important as a precursor of co-enzymes for all decarboxylation of ketoacids

b) Is Fat soluble

c) It is a Polar agents

d) Is synthesized in the body

12. Vitamin K

a) Main source is diet

b) Activation is through contact with water

c) Produced in the body by the liver
d) It is a precursor of all clotting factors

13. Protein synthesis
a) Only occurs during exercise
b) Increased during exercise
c) Determined by RNA
d) No enzyme is involved

14. Carbohydrates
a) Act as a metabolic intermediate
b) Has a co-enzyme property
c) Minor source of energy
d) Stored as glucose in the body

15. Essential amino acids
a) Synthesized in the body
b) Exclusively acquired from the diet
c) Cannot be degraded
d) Degraded mainly in kidneys

16. Main sources of albumin includes
a) Green leafy vegetables
b) Eggs
c) Legumes
d) Beef

17. Globular proteins
a) Are coiled cross-linked polypeptides
b) Insoluble in water readily digested by enzymes
c) Only available from diet
d) soluble in water

18. Glycolysis refers to
a) Gastric metabolism of carbohydrates
b) Reduction of glucose or glycogen
c) Oxidation of polysaccharides

d) Oxidation of glucoses and glycogen

19. Conversion of glucose 6 phosphate into Fructose 6 phosphate is meant to:
    a) Form symmetrical molecule for easy enzyme action
    b) Improve cellular uptake
    c) Improve the amount of ATP produced
    d) Reduce the amount of energy required for processes
20. NADH during glycolysis
    a) Acts an electronic donor
    b) Acts as an electronic acceptor
    c) acts as a substrate for energy generation
    d) Acts as a Condensation agent

Section B: True/False negative marking will be applied

1. In denatured proteins
    a) There is increased in number of reactive proteins
    b) Increased solubility
    c) Have high propensity to precipitation T
    d) There is loss of biological function T
    e) There restoration of biological functions F
2. The following is true about Calcium in the body
    a) Key in vitamin B12 absorption
    b) Its utilization is stimulated by vitamin D T
    c) Key in mineralization of the bones T
    d) Depresses nerve impulse transmission
    e) Excreted exclusively through treat
3. Pancreatic zymogens that are key in intestinal protein metabolism include
    a) Trypsinogen T
    b) Chymotrypsinogen
    c) Pepsinogen F
    d) Angiotensin
    e) Cholecalciferol

4. Biological roles of lipids include
   a) Source of energy T
   b) Effective Hydrophobic barrier between aqueous and sub- cellular structure T
   c) Key in maintenance of amino acid level T
   d) Key in water soluble vitamin absorption F
   e) Required on in trace amounts F
5. Protein denaturation
   a) Involves destruction of higher level structural organization T
   b) There is retention of some biological properties F
   c) Denatured proteins can renature by refolding
   d) Always irreversible
   e) Vital phase of protein synthesis F
6. Factors that affecting denaturation include
   a) Physical factors like ionization T
   b) Chemical factors like acids T
   c) Biological factors like microbes F
   d) Physiological state and type of protein F
   e) Temperature T
7. Properties of denatured proteins
   a) There is increased number of reactive proteins
   b) Reduced solubility T
   c) prone to precipitation
   d) loss of biological activity T
   e) Difficulty to be broken down by proteolytic enzymes T
8. Clinical application of denatured proteins include
   a) Their presence may indicate renal impairment
   b) Assessment of presence of myelomas
   c) Used to cause nerve system disorders
   d) Used to determine immunological disorders
   e) Asses immune status
9. Hydrochloric acid produced by parietal cells has the following roles

a) Lower PH for optimal enzyme action T
b) Denatures the protein for easy enzyme action T
c) Increases the PH F
d) Improves absorption of proteins F
e) Activates enzymes T

10. In triglyceride degradation/ metabolism
a) Amino acids and glycerol and produced
b) Hydrolysis is involved
c) Trypsin enzyme plays a major role
d) Takes place in the mouth F
e) Takes place in the liver T

11. Amino acid degradation involves the following
a) Transamination
b) Conjugation
c) Condensation
d) Sublimation
e) Precipitation

12. Deamination of amino acids involves the following mechanism
a) Oxidation
b) Dehydration
c) Reduction
d) Hydrogenation
e) Phosphorylation

13. Carbon skeleton generated during deamination of amino acids are utilized for
a) Energy generation in krebs cycle
b) Lipid metabolism
c) Carbohydrates metabolism
d) Dehydration pathway
e) Transport of biomolecules

14. Complex biomolecules include
a) DNA T

b) RNA T

c) Proteins T

d) Carbohydrates T

e) Lipids T

15. Cell membrane functions include

a) Transport T

b) Receptors site T

c) Metabolic site F

d) Barrier T

e) Structural integrity T

16. Nucleic acid consist of

a) A base T

b) A sugar T

c) A phosphate T

d) A sulphate F

e) A carbonate F

17. Pancreatic juice contain the following enzymes that is important in lipids metabolism

a) Pepsin F

b) Trypsinogen T

c) Lipase T

d) Cholesterol esterase

e) phospholipase

18. Stages in translation during protein synthesis include

a) Activation T

b) Initiation T

c) Expansion F

d) Progression F

e) Termination T

19. Protein synthesis takes place in

a) Golgi apparatus F

b) Lysosome F

c) Ribosomes T

d) Mitochondria T

e) Vacuoles F

20. Carbohydrates functions include

a) Information expression on cell surface T

b) Osmotic regulation T

c) Structural role as in GAGS (glycosominoglycans) T

d) Energy source T

e) Cell membrane structure T

15/20

KMTC MOMBASA CAMPUS CLINICAL MEDICINE SEMESTER II KMTC/QP-08/15

D/CM/17010/310 TRUE/FALSE: SUBJECT Medical Biochemistry DATE 30/06/17

1	T	F
a		
b		
c	✗	
d	✗	
e		✗

2	T	F
a		
b	✗	
c	✗	
d		
e		

3	T	F
a	✗	
b		
c		✗
d		
e		

4	T	F
a	✗	
b	✗	
c	✗	
d		✗
e		✗

5	T	F
a	✗	
b		✗
c		
d		
e		✗

S6
3
46

6	T	F
a	✗	
b	✗	
c		✗
d		✗
e	✗	

7	T	F
a		
b	✗	
c		
d	✗	
e	✗	

8	T	F
a		
b		
c		
d		
e		

9	T	F
a	✗	
b	✗	
c		✗
d		✗
e	✗	

10	T	F
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b		
c		
d		✗
e	✗	

11	T	F
a		
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c		
d		
e		

12	T	F
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c		
d		
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13	T	F
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14	T	F
a	✗	
b	✗	
c	✗	
d	✗	
e	✗	

15	T	F
a	✗	
b	✗	
c		✗
d	✗	
e	✗	

16	T	F
a	✗	
b	✗	
c	✗	
d		✗
e		✗

17	T	F
a		✗
b	✗	
c	✗	
d		
e		

18	T	F
a	✗	
b	✗	
c		✗
d		✗
e	✗	

19	T	F
a		✗
b		✗
c	✗	
d		✗
e		✗

20	T	F
a	✗	
b		
c	✗	
d	✗	
e		

21	T	F
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22	T	F
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23	T	F
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24	T	F
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25	T	F
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26	T	F
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26	T	F
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27	T	F
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b		
c		
d		
e		

28	T	F
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b		
c		
d		
e		

30	T	F
a		
b		
c		
d		
e		

13/20 x30

20/30

30/60

1	T
a	
b	
c	✓
d	
e	

2	T
a	
b	
c	
d	X
e	

3	T
a	✓
b	
c	
d	
e	

4	T
a	
b	
c	
d	✓
e	

5	T
a	
b	X
c	
d	
e	

6	T
a	✓
b	
c	
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7	T
a	✓
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8	T
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9	T
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10	T
a	X
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d	
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11	T
a	✓
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12	T
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d	✓
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13	T
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c	X
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14	T
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d	✓
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15	T
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b	✓
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16	T
a	
b	✓
c	
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17	T
a	X
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18	T
a	
b	X
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19	T
a	✓
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20	T
a	X
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21	T
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22	T
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25	T
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26	T
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26	T
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27	T
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28	T
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c	
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30	T
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