

# RASHIDA IQBAL FINANCIAL AID ORGANIZATION



## BIOCHEMISTRY VIVA QUESTIONS FOR 1<sup>ST</sup> YEAR:

External

- heteropolysachride
- difference b/w DNA RNA
- balanced diet
- dietary recommendation
- albumin globulin ratio
- its diagnostic value

Internal

- valine , its position in protein
- regulatory enzyme
- treatment of cholestrol
- treatment of gout
- what kind of inhibitor is allupurinol
- respiratoy buffer
- acid produced mostly in body
- how is ammonium formed in body

External: Define Vitamins.

Significance of B-complex.

Define lipids.

Compound lipids.

How ph of blood is maintained. How Haemoglobin act as buffer.

What is balanced diet

Internal:

What is Cardiolipins

Allosteric enzymes.

Micheallis menten eq.

Mechanism of action

Covalent catalysis.

Regulation

Phospho and dephospholylation and how does it regulates the enzymes activity.

Most abundant Amino acid.

Most important blood buffer.

What are nucleic acids  
Types of RNA and functions  
Folic acid and pernicious anemia  
Sources and functions of vit A  
Glycoproteins proteoglycans  
Heparin  
Signal transduction  
INTERNAL:  
Define lipids , name essential Fatty acids, in ki deficiency  
Diet me konse fatty acids  
Copper functions ,Wilson's disease  
pH and pka  
Cardiolipin  
Enzymes as diagnostic tools  
Internal:  
What's the average calorie intake?  
What you like to have for breakfast?  
List the sugars present in your breakfast.  
Bilirubin formation.  
How bilirubin is transported?  
Porphyria.  
Crigler Najjar syndrome.  
Source of starch in diet.  
External:  
What is protein?  
Enzyme repression example.  
Enzyme induction example.  
Protein and the structural levels.  
Enzyme inhibition  
Internal  
What are enzymes?  
Can they be non protein?  
Ribozyme?  
What is pKa?  
Which is the most imp buffer?  
Why is it imp?  
Phosphate better or bicarbonate buffer?  
Plasma pH value

External

What is signal transduction?  
What is G protein?  
What are proteoglycans?  
What are glycoproteins?  
Differentiate them  
What is diffusion?  
Types of diffusion?  
Deficiency of vit C?  
Symptoms of scurvy?  
Function of vit C?  
Def of vit D?  
Balanced diet?

definitions should be proper

Buffers PH and enzymes and minerals (levels in serum and blood) were given much importance by internal

External: what is enzyme , inhibition , induction ,types, of enzymes....lipoprotein, how acid balance is maintained in body,, types of buffers, imp buffer of body,imp minerals ,, role of calcium.... Internal:

porphyria , thalassemia, sickle cell , advantage to heterozygote, diff b/w DNA n RNA.... mRNA

~Internal

Colloids?

Viscosity of plasma is due to which factor? Which plasma protein specifically?

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What are chaperones?  
Alzheimers disease?  
What are prions?  
Calcium functions? Sources? Requirement in children? Absorption?

~External

Vit C functions, deficiency  
Vit D functions, deficiency  
Vit B12 functions  
What are codons? Total number of codons?  
What is balanced diet? Recommend a balanced diet?  
External : Types of transport , Cell membrane , Heteropolysaccharodes , definition of gene, vitamin D ,  
Nutrition  
Internal : Buffers and acidosis

Internal:

1. The functions of mitochondria, other than the production of ATP
2. The first step in heme synthesis
3. Why is proline different from other amino acids and why cant it form an alpha helix
4. Essential fatty acids and their deficiency; cardiolipin
5. Competitive inhibitors and their examples
6. How important are plasma proteins as buffers?

External:

1. What are heteropolysaccharides? What is the basic unit?
2. The functions and deficiency of vitamin c
3. The different types of RNA
4. Active transport and diffusion
5. What is a codon?
6. What is the total number of codons present?

EXTERNAL:

Define enzymes  
What are isoenzymes? Significance  
Define lipids.  
What are TAGS.  
What are minerals and significance.

INTERNAL :

Porphyria  
Vit B12  
Hemoglobin and myoglobin  
What is primaray messenger  
Signal transduction  
Classify proteins  
D and L sugars  
Role of minerals in our body  
Acid base balance  
Nucleoproteins  
Induction of enzymes  
Inhibitors

INTERNAL:

Functions and sources of vit.E  
Function of vit.D(including relation with plasma Ca level )  
Functions of riboflavin

Internal:

What are purines and pyrimidines  
H-bond b/w them  
Structure of DNA  
Why DNA is negatively charged

External:

Co enzymes

Prosthetic groups

Neutral fats

Functions of lipids

Internal:

Placenta ko konsa Ig cross krta?

Infection k case m sbse phly kon c Ig bnti?

IgA ka function? Kahan present hoti?

Opsonization?

External

Define Protein?

Animal r plant protein m diff?

Wheat m kon c protein hoti?

Animal protein q prefer krty?

Inhibitors?

Competitive?

Non competitive?

Regulation of enzyme k procees?

Induction REPRESSION kya hota?

Classify proteins

Hb buffer

Heam (how it differs from chlorophyll)

Calcium magnesium

Collagen formation

Alzheimer disease

Glycogenic and ketogenic amino acids

Enzymes for hydroxylation of proline and lysine?

External:

RDA

DNA forms

Gene

Codon

Internal-

-Vitamin A active form.

Visual cycle.

What would first happen in Vitamin A deficiency? (Answer is not Night Blindness 😊)

Vitamin D synthesis in detail.

-Sun mai kitni der rehna chaie Vit D ki acchi synthesis ke liye?

Which rays synthesise Vit D?

Kis waqt ki sun rays acchi hoti hai?

What are Nucleotides?

Their role and function.

External-

Beta, what are Enzymes? 😊

Isoenzymes.

Their role in clinical diagnosis.

(Give examples of CK LH ALT AST Alkaline phosphatase etc because he went in detail)

Functions of Proteins.

Functions of Lipids.

Cholesterol stucture and function.

INTERNAL:- What is bilirubin? 😊 where is it formed? -What are reticulendothelial cells? where are they present? -Life span of RBC and how much of them are destructed daily? - Which part of Hb forms bilirubin? agar porphyrin ring bilirubin bana raha hai to iron kahan gaya? 😊 😊 -iron blood me kis k sath combine hota hai? us k bad kahan jata hai? kahan store hota hai? kis k sath hota hai? ( seems like he was really worried for iron 😊 😊) -what is hemachromatosis? -in which conditions iron will increase in body? -name some diasacrides and linkage of sucrose. EXTERNAL: diff between enzymes and ordinary catalyst? what are ribozymes? what is their funtion? how enzymes work? what is cholestrol? us ka structure function. how proteins are formed in the

body? why are proteins important? secondary structure of proteins. beta bends. what is pH. importance and buffers.

Internal : Cell membrane mn Jo peripheral protein hoti ha usk functions btae ☺

Glycoproteins Proteoglycans

Blood kahan bnta ha

Heme kis kis compound mn hota ha

Heme heme interaction kia hota ha

Simple proteins

Baki i don't remember

External

Ribozyme

Enzyme classification

Minerals function

macro minerals k naam

Iodine k functions...Deficiency in children ko kia kehty hain

What is pH is ka use...

Buffers

pH disturb ho to kia hota ha

Cholesterol k functions

internal:

What are GAGs?, fetal hemoglobin, which is better carrier HbA or HbF nd why? albumin concentration, heme containing comp, kernicterus, highest amount of heme is produced in, function of myoglobin, where is myoglobin present

Internal:

Analog

Vit E

Night blindness

RNA n DNA diff

Role of vit A in keratin synthesis

Internal

Amino acids A-Z (lethal)

Hb buffer

Heme formation and function

Enzymes

External (halwa)

Functions of blood

Balanced diet

Signal transduction

Vit C

Folic acid

A/g ratio

Plasma proteins

internal Topics

Blood vitamins Carbs

What is methemoglobin

Causes in which people it occurs

When oxyHb reaches tissue who does it rly O2 conditions asked

Whats Mg how does it carry O2

Curve shape

Fetal or HbA which has greater affinity for O2 and why

How does vitD3 get activated A to Z process

How calcitriol is regulated?

External topics

Cell Buffers Ph Minerals protein and A a

Classify proteins

What are simple proteins

Alpha amino acids

Which one are present in proteins either L type or D type

Minerals definition

Fe importance

External

Enzyme def

Classify

What are ligases?

What is enzyme induction? Example?

What are fun of lipids? Fun of cholesterol?

What is acid base balance?

Kahan kahan hota hai ye?

Internal

Ceruloplasmin

Def in what condition

Cause of def

Plasma main kon sa bilirubin zaida hota hai? And why?

Most abundant plasma protein?

Thalassemia definition

Sickle cell anemia definition

internal ka viva

Vitamin A functions and its deficiency

Night blindness

non reducing disaccharides examples

GAGs

kinds of acidic sugars of gags

difference b/w iduronic acid and glucuronic acid

External

Acid base balance

Enzyme function

isozymes

isozymes in medical diagnosis with example

conjugated protein

internal : Collagen, deficiency of vit c, synthesis of collagen, elastin, bilirubin level, plasma mein conjugated ziada hai ya unconjugated, if conjugated tou why xD

external function of proteins, mechanism of enzyme action, iodine, func of lipids, cholesterol

Internal :

\* folic acid functions

\*folate trap

\*Bilirubin level

\* which bilirubin is present in high concentration and why

\* What happens to bilirubin in intestine , complete process

\* crigler najjar syndrome

\* which Immunoglobulin is synthesized first and why

\* class switching of Ig

\* Which immunoglobulin is in high concentration

\* dextrin , dextran difference

\* glucuronic acid and iduronic acid difference

\* albumin level

External :

\*Classification of enzymes

\*Mechanism of enzyme action ( not catalysis ) full detail ,

\* Free energy of activation

\* Induction and example

\* lipids functions

\* iodine functions

Internal:

Functions of calcium. And then everything tetany. What is it, which condition it is seen in, is total serum Calcium affected, which form of Calcium is abundant in this, other causes of tetany, how does pH change cause tetany, effect of Magnesium on tetany.

External:

Basics. What are heteropolysaccharides, significance of A:G ratio, what is blood, functions of bl

## **BIOCHEM OSPE**

def viscosity and factors affecting it

2) names of some tests

3) active form of riboflavin

4) aik conversion thi

5) glucose thershold level and causes of glucosuria

6) Ca serum level n hypocalcemia cause

7) isoelectric pH def and value of casein

8) why proteins are half saturated and full saturated

Observed pe lead sulphide aur sakaguchi

Note; do biochem practical notebook properly for practical vivas and some ospe questions

Remember us in your prayers

Regards

Mubashra Gull (3<sup>rd</sup> Year)

Publication Representative

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DEPARTMENT OF BIOCHEMISTRY, RAWALPINDI MEDICAL COLLEGE, RAWALPINDI

1<sup>st</sup> Year MBBS

Topics: Chemistry of proteins

Total Marks. 20

Date: 19/03/2014

Plasma Proteins & Separation Techniques

Time Allowed: 40 Min

Q1 Describe various types of secondary structure of protein (5)

Q2 a. Name any four non-standard amino acids along with their biologic function (2)

b. An old man was admitted in the hospital emergency with the complaint of shortness of breath on history he told that he was a chain smoker (3)

a. Which plasma protein may be deficient in this patient

b. What is role of smoking in causation of such a disease

c. How can you treat this disease

Q3a. What are different types of immunoglobulins? Give clinical significance of IgG and IgE (3)

b. Describe the biological functions of plasma albumin and haptoglobin (2)

Q4. Write notes on

a. Electrophoresis (2)

c. Zwitterion (1)

b. Dialysis (1)

d. Prion disease (1)

DEPARTMENT OF BIOCHEMISTRY, RAWALPINDI MEDICAL

1<sup>st</sup> Year MBBII

Topics: Send up

Date: 17-08-2015

- Q1. Define and Classify amino acids in detail.
- Q2 (a). Explain  $\beta$ -thalassaemia, what preventive measures can be taken in our society.  
(b). Enumerate different types of Hb in a normal adult, explain ed HbA1c in detail.
- Q3. (a). Describe physiological jaundice of new born.  
(b). Describe the procoagulans.
- Q4 (a). Define homopolysaccharides, what are the differences between starch and glycogen.  
(b). Describe the alveolins.



Time Allowed 2 Hours and

## Attempt ALL Questions.

Name the oxidation and reduction products of Glucose. What is the clinical significance of Mannitol, Dextrans and Heparin? What is meant by mucopolysaccharidoses?

What is Phosphatidic acid and its derivatives? What is meant by lipid peroxidation?

Classify amino acids on the basis of their nutritional value. Explain the quaternary structure and function of Haemoglobin.

4. a) A young male presented with high-grade fever, weakness, yellow colored eyes and pain in abdomen. The liver profile was performed and raised level of Alanine transaminase and Aspartate transaminase were raised.
    - i) To which class of enzymes, the above mentioned enzymes belong?
    - ii) What coenzyme is required for their activity?
    - iii) What are the biochemical reactions carried out by these enzymes?
  - b) What is Michaelis Menten equation?
5. a) How and where Bilirubin is synthesized, what is its fate in the human

... glycosaminoglycans for  
dextrans along with their basic structure and

Classify unsaturated fatty acids along with  
unsaturated fatty acids. Write down principle  
and prostacyclin.

Enumerate FOUR standard amino acids with  
chain? Describe quaternary structure of protein

A 50-year-old male patient reveals a long history of  
years. He reports feeling hungry and has lost weight.  
physical examination he appears malnourished.  
examination is normal. His blood count reveals  
... people with large red blood cells

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Attempt all question in sequence

Q. No. 01.(a) Name any four non-standard amino acids along with their biologic functions. (02)

(b) Describe various type of secondary structure of proteins. (03)

Q. No. 02 (a). What are simple protein? Give the structural and functional properties of collagen. (03)

(b) Describe the biologic functions of plasma albumin and haemoglobin. (02)

Q.No. 03. (a) What is the role of amino acid side chain (R group) in protein folding? Briefly describe the relationship of protein structure to its function. Give at least one example. (03)

(b) What are different type of immunoglobulins? Give clinical significance of IgG and IgE. (02)

Q.No. 04 What are various separation techniques? Describe electrophoresis in detail. (2+3)

1<sup>st</sup> Year MBBS

Date: 02-09-2013

Q1a. What is dextran. Give its use in m

b. Explain optical isomerism

Q2. Plot titration curve of alanine by add

Q3. What is cholesterol, enumerate its f

Q4. Classify enzyme inhibitors; explain

Q5a. Explain the oxygen dissociation c

b. Explain the excretion of bilirubin f

Q6. Explain folic acid in detail

Q7. Explain the absorption and transpor

proteins, enumerate?

b) A solution contains carbonic acid/bicarbonate buffer. If the pKa of carbonic acid is 6.1 and  $\log 100 = 2$ , calculate the pH of solution.

Enumerate all disaccharides and give the structure in human milk.

a) Enumerate  $\omega$ -3 fatty acids of dietary importance that undergo peroxidation resulting in the formation of free radicals.

b) Give the structural components & tissue location of the following:

a) Enumerate the components of secondary structure of proteins, mentioning the forces responsible for their maintenance.

b) Which changes occur in protein structure resulting in the following diseases?

i) Prion disease

ii) Alzheimer's disease

a) Enumerate the purine & pyrimidine nucleotides involved in the formation of DNA & tRNA in man.

b) A patient presented with joint pains. On detection, it was labelled a case of HGPRT (Hypoxanthine Phosphoribosyl Transferase) deficiency. How does this enzyme deficiency lead to joint pains?

a) Enumerate all mechanisms through which enzymes are regulated. Also mention the importance of plasma enzymes.



DEPARTMENT OF BIOCHEMISTRY, RAWALPINDI MEDICAL COLLEGE, RAWALPINDI

Class 1<sup>st</sup> year MBBS  
Date: 12/03/2016

Chemistry of Protein  
Plasma Protein, Separation Techniques  
Chemistry of Nucleic Acid

Total Marks: 20  
Time Allowed: 40 minutes

Attempt all question in sequence

✓ Q1.a) Enumerate the components of secondary structure of proteins mentioning the forces responsible for their maintenance. (02)

✓ b) Which changes occur in protein structure resulting in the

i. Prion disease (1.5)

ii. Alzheimers disease (1.5)

✓ Q2.a) Name of any four non-standard amino acid along with their biologic functions. (02)

b) Enumerate types of immunoglobulin. Explain the structure of immunoglobulin. (03)

Chemistry  
of  
Nucleic  
acid

✓ Q3.a) What are the basic structural characteristics of nucleosides and nucleotides, along with the examples of mononucleotides of cytosine and uracil? What is the function of cyclic AMP. (02)

✓ (b) Enumerate the types of RNA, explain the structure of tRNA. (03)

✓ Q4. What are various separation techniques explain electrophoresis in detail (2+3).

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