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Course Title: Medical Biochemistry II
RAD 2nd, Sec A
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Student ID: 16240

Max Marks: 50

Note: There are FIVE questions, each carry 10 marks with grand total of 50 marks.
ATTEMPT all questions.
Avoid copy paste material, as it may deduct your marks.

Q1. Explain the process of "ATP synthesis coupled with electron flow".

Q2. Write the reactions that are catalyzed by the following enzymes.

i. Acyl CoA dehydrogenase
ii. Adenosine deaminase
iii. Nucleotidase
iv. Gluconolactonase
v. Enoyl-CoA hydratase

Q3. Define nucleotide, nucleoside and differentiate between DNA and RNA.

Q4. Why Dickens and Horecker's Pathway is called HMP pathway. Enlist the enzymes used in PPP Pathway.

Q5. What is the function of carnitine shuttle system? Write down the stages and steps involved in Beta oxidation of Lipids.

Paper biochemistry

Semester.2nd

Section.A

Department. B.S Radiology

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QNo (1) Explain the process of "ATP synthesis coupled with electron flow".

Ans…

The transfer of electron through a series electron doner and accepter generating energy that is ultimately used for synthesis of ATP as it occurs in the mitcondrial

Inner membrane or chroplast thylocoid membrane

- Metabolic process used in NADH and FADH2 to transport electron
- These electron are passed NADH orFADH2

To membrane bonded electron carrier which are then passed on to

Other electron carrier until finally given to oxygen resulting in the production of

Water .as electron are passed From one electron carrier to another hydrogen ion

Are transported into intermembrane space and three specific point in the chin

- The transportation of hydrogen ion create a greater conceration of hydrogen ion in the intermembran space Then in the matrix which can then be used

  To drive ATP Synthase and produce ATP (a highy energy Molecules)

QNo (3) Define nucleotide, nucleoside and differentiate between DNA and RNA.

Ans..

Nucleotide

Any group of molecules that when linked toghter from the building blocks of DNA or RNA composed of phosphate group The base adenine,guanine, cytocine thymine

And pentose suger in RNA

The thymine base being replaced by uricle.

A nucleoside consist of nitrogenous base covelently attached to suger

(Ribose and Deoxyribose)but without the phosphate group

DNA

1)DNA is self replicating

2) the DNA helix geometry is in the forms of B and can be damage

By exposure of ultra violet Ray's

3)it is Long polymer chain

4) DNA produce regular helix i.e it is spirely twisted

5) Quantity of DNA is fixed for cell

6)life of DNA is long

RNA

1)it is synthesis from DNA when needed

2) The RNA helix geometry is in the forms of A it is more resistant to demage by

Ultra violet Ray's

3) it is shorter polymer

4) the quantity of RNA for a cell is variable

5)it is of four types m.RNA ,t.RNA,r.RNA

6)it life is short. Some RNA have very shorter life but somethingimk. have longer but in all its life is shorta

QNo (2) Write the reactions that are catalyzed by the following enzymes.

i. Acyl CoA dehydrogenase

ii. Adenosine deaminase

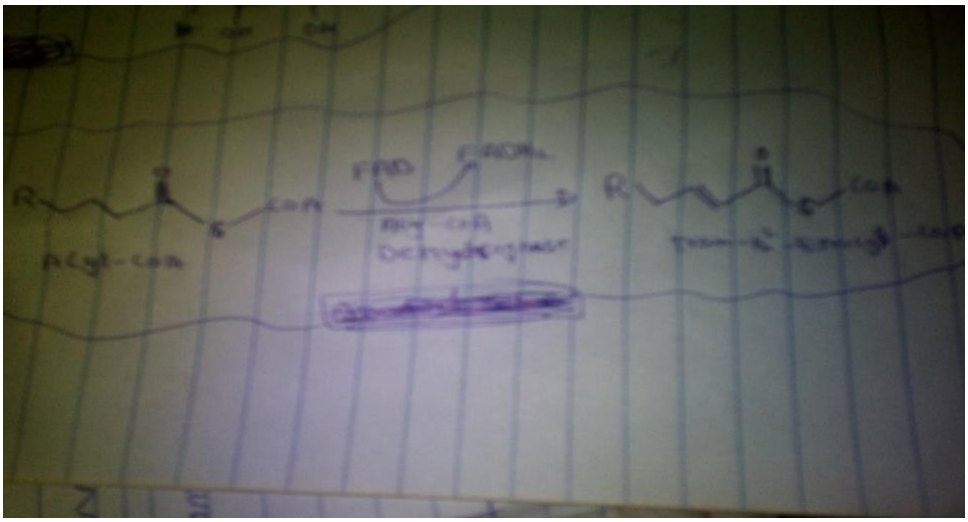
iii. Nucleotidase

iv. Gluconolactonase

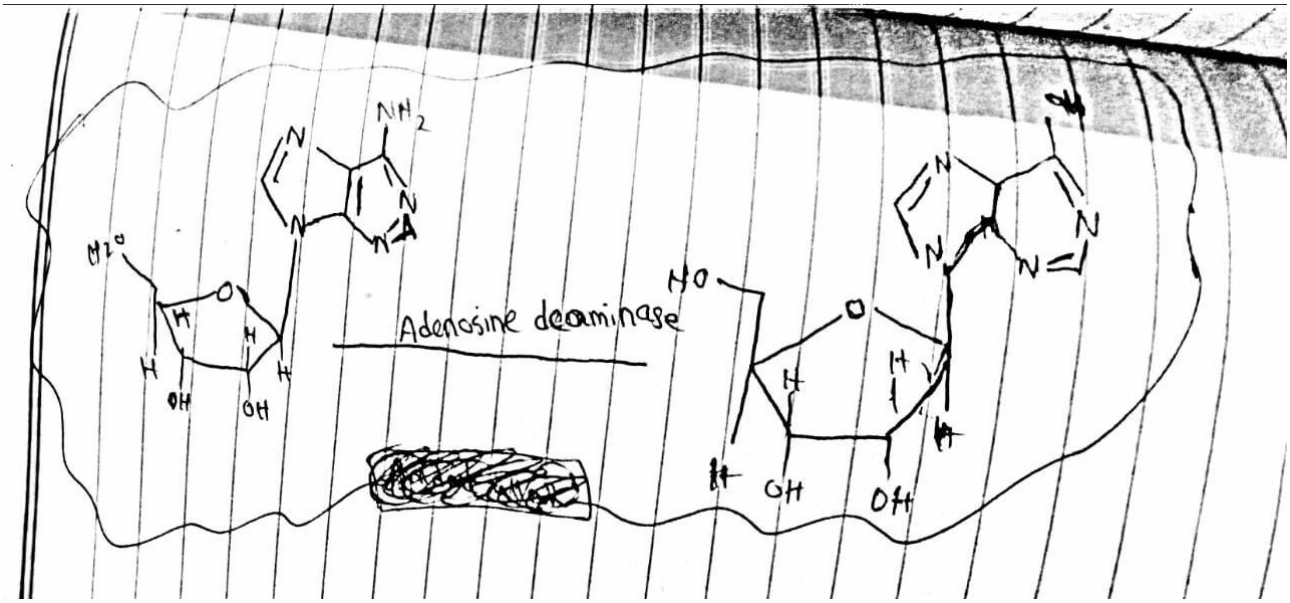
v. Enoyl-CoA hydratase

Ans..

(1)Acyl-coA dehydrogenase (ACADs)are a class of enzymes that function to catalyze the the initial steps in each cycle of fatty acids B.oxidation in the mitochondria of cell

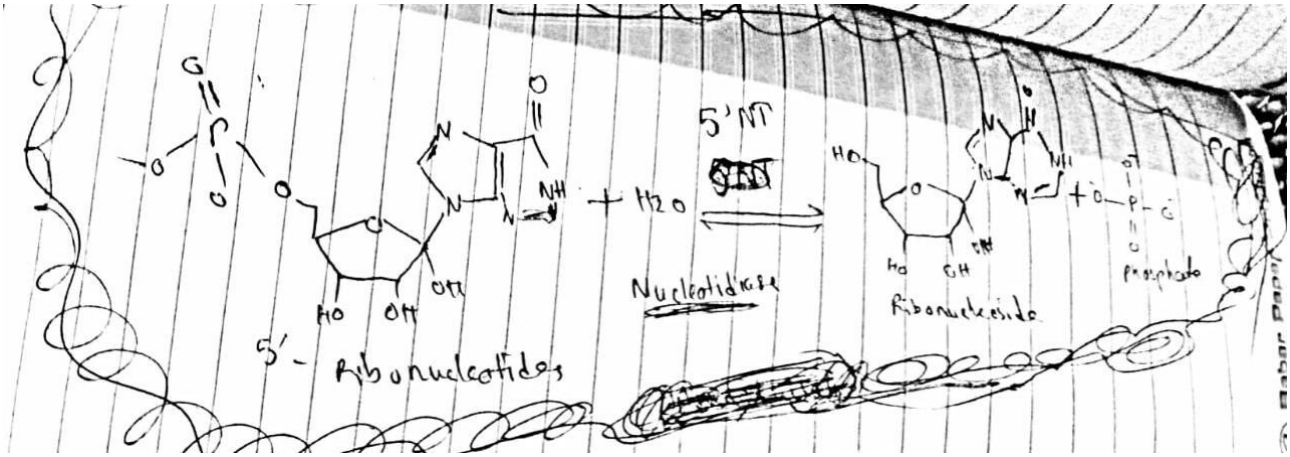


2) Adenosine deaminase a (ADA) is a metaalloenzyme



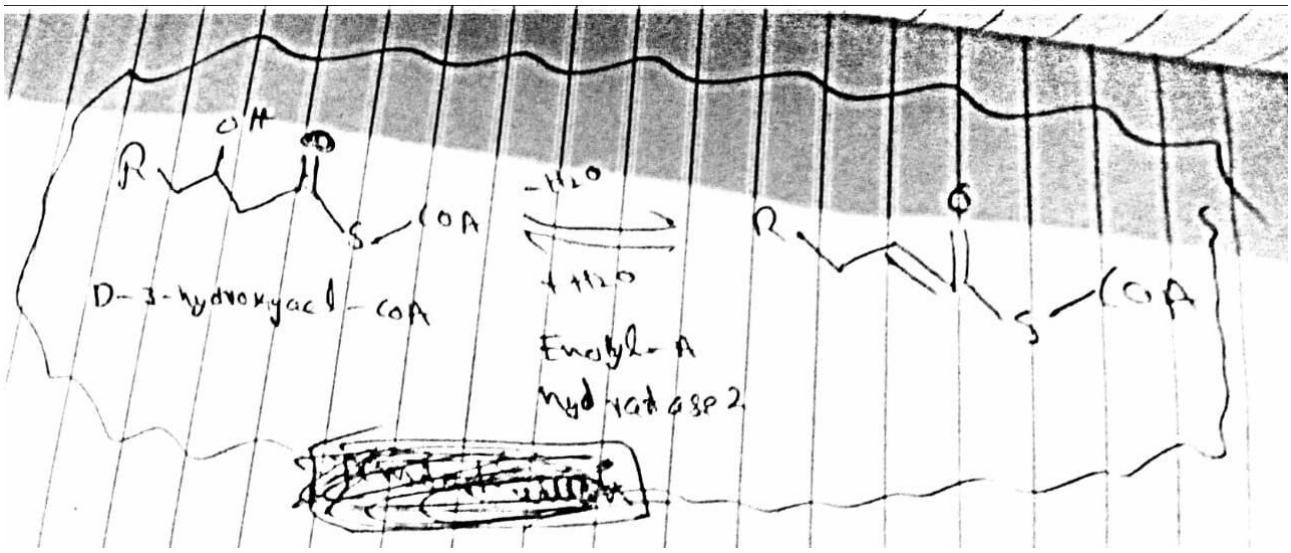
involved in the metabolic degradation of 6-aminopurine nucleoside.

3) Nucleotidase is an enzymes which is involved in the hydrolysis of



a nucleotide to forms a nucleoside and a phosphate. Due to this role Nucleotidase is know as a hydrolytic.

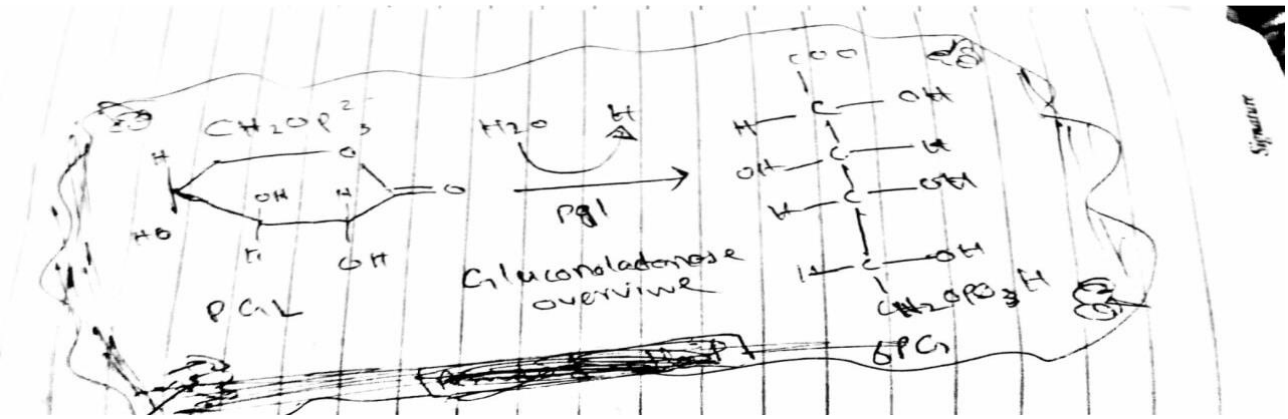
5)Enoyl -CoA hydratase (ECH) catalyze the second step in the physiologically important beta-oxidation pathway of fatty acids metabolism.



*4)*Gloconolactnase is an enzymes that catalyze the chemical

reaction D glucono

-1-5-lactone -H2O-D gloconate-T



QNo (5) What is the function of carnitine shuttle system? Write down the

stages and steps involved in Beta oxidation of Lipids.

Ans

The carnitine shuttle represent amechanism by which Long chain fatty acids which are impermeable to the mitochondrial membrane and transported into the mitcondrial matrix for the purpose beta oxidation and energy production

Function

- It is responsible for transferring of Long chain fatty acids across the barrier Of inner mitcondrial membrane to gain access to the enzymes of beta oxidation

In living cell carnitine is required for the transport of fatty acids from the cytosol into the mitcondria during the break down of lipids for the generations of metabolic energy

- It is widely available is a nutritional supplement

  Beta-oxidation of lipids

  Beta oxidation is the catabolic process by which fatty acids molecules are break down to generate acetyl Co-A

  Use of NADH2 and FADH2

  Acetyl Co-A enter the citric acid cycle while NADH and FADH2 produce in beta oxidation process is.

Occurrence

- Beta oxidation of fatty acids occurs in mitcondria

Substrate

- Free fatty acids H2O

Products

- One acetyl Co-A one NADH2 and one FADH2 for every removel of a two-carbon group from the fatty acids chain

Stage involved in beta-oxidation

Three stage are involved in beta oxidation of fatty acids

- Activation of fatty acids occuring in the cytoplasm
- Transport of fatty acids into mitcondria
- Beta oxidation in the mitcondrial matrix

QNo 4) Why Dickens and Horecker's Pathway is called HMP pathway. Enlist the enzymes used in PPP Pathway.?

ANS . The HMP pathway is also called Warburg_Dicken-

Horecker pathway.it is used by heterofarmentive lactic acid bacteria.

Bacillus spp, and psedomanase spp. Ribose phasphat ribose phasphat can be used for synthesis of ribose and Deoxyribose mietics in nuclic acids.

Enzymes used in ppp pathway

- Golcose 6-phosphate Dehydrogenase
    - Gluconolactnase

      6-phaspogluconate Dehydrogenase enzymes

      Involved in non oxidative phase

      Ribose 5-phasphate 3-epimarase

- Isomerase enzyme
- Epimarase enzyme
- Transketolase enzyme
- Transaldolase enzyme

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