RAGHAVI. V
Assistant Professor
Department of B.C
T.T. college of Arts & Science (Autono)

D/H	1	2	3	4	5
D_1	I MSc	II MSc	III BSc	I MSc	
D_2	III BSc	I MSc			
D_3			III BSc		
D_4	← III BSc Major Lab →				
D_5		III BSc			
D_6				III BSc	

Molecular Biology [P3RIBCCC13]

Unit - I

DNA replication:

Types of replication, evidence for Semi conservation replication - Messelson and stahl experiment. replications in circular chromosomes - cairns model. rolling circle model. Replication in prokaryotes and inhibitors of replication, replication bubble, bidirectional replication, replicon, action of SSB, primase, DNA gyrase, topoisomerases, DNA polymerase I, II and III, lagging and leading strand synthesis, okazaki fragments, replication in RNA virus, plasmid replication, reverse transcriptase, retroviruses, Eukaryotic replication (overview and method), inhibitors of replication.

Unit - II

Transcription:

Transcription - definition, coding strand, template strand, sense strand and antisense strand, promoter, DNA - dependant RNA polymerase, role of pribnow box, template binding, prokaryotic transcription,

Date :- 8/11/22 Pg No :- 3

Day Order :- 3 Mode :- ICT

The TRP OPERON

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Date 8/11/22

Log Present.

NAME : Dr. S. KANITHA

DEPARTMENT : BIOCHEMISTRY

CLASS : III B.Sc BIOCHEMISTRY

COURSE CODE : USRIBCCC10

COURSE : INTERMEDIARY METABOLISM

SEMESTER : V

11/7/22
3 HR

CHALK AND TALK

INTRODUCTION:

Metabolism deals with the various reactions that take place within the living system related to the biosynthe-sis of macromolecules from micro-molecules and the breakingdown of macromolecules to small molecules. It also deals with the energy molecule production & utilization.

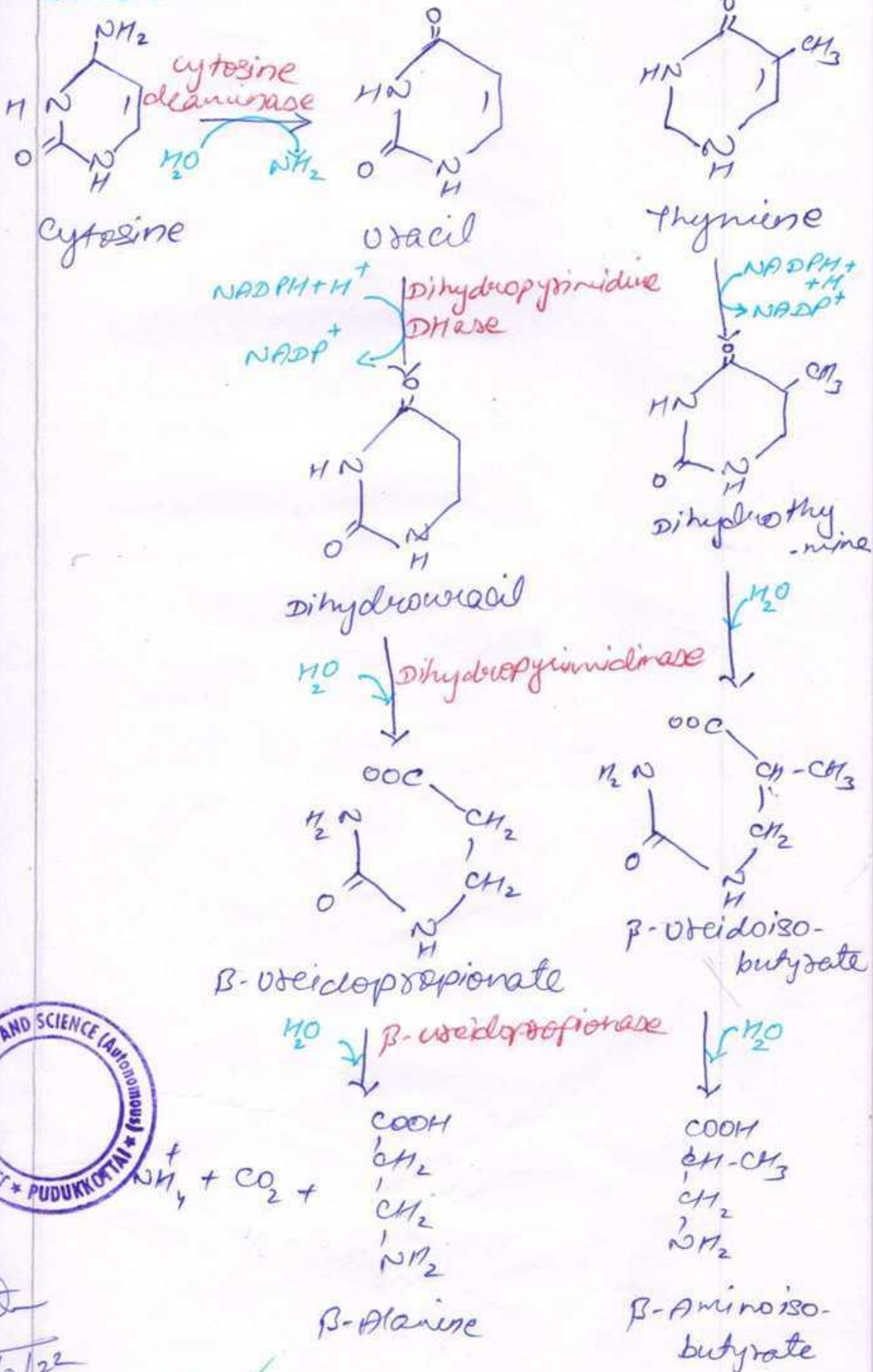
- Anabolism
- Catabolism

The anabolic reactions require energy. The catabolic reactions are responsible for the release of energy.

During the well fed condition, the anabolic reactions take place whereas the catabolic reactions occur during the starvation or the fasting period.

ICT

PYRIMIDINE NUCLEOTIDE DEGRADATION



18/10/22

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Dr. M. SATHUVAN

Biochemistry

Biophysics

Date: 5/7/2022 Chalk and talk

D/o : 11

Biophysics

Introduction:

- About acids and bases
- Types of acid and bases

Importance of acid and bases in our life,

Everyday life related to acid and base How these acid and bases helping our day today activity

Acids donate H^+ bases Accept H^+

blue to red Red to blue

0 —— 14

Acidic basic

HCl, H_2SO_4 NaOH, KOH

27/10/22
D. M.

Carbaminohaemoglobin

Equations for blood oxyhaem
1+bo2 and Carbaminohaemoglobin
Hbco2 dissociation curves that
incorporate nonlinear biochemical
interactions of oxygen and carbon
with haemoglobin (Hb), covering
a wide range of physiological
conditions, are crucial for a
number of practical applications.
* These include the development
of physiological conditions.

* Computational models of alveolar
blood and blood tissue O_2-CO_2
, exchange, and
metabolism, and the analysis
of clinical and invitro-

Dr. A. S. VIJAYAKUMAR.
Assistant Professor
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(Autonomous)

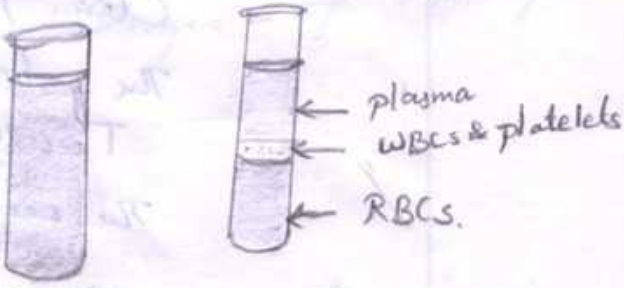
	1	2	3	4	5
D_1	II B.Sc		II B.Sc		II M.Sc
D_2	II M.Sc				II B.Sc
D_3			II M.Sc		
D_4	I M.Sc	II M.Sc		II B.Sc	
D_5	←		II M.Sc Lab		→
D6	I M.Sc			II M.Sc	

Clinical Biochemistry (Chalk & talk)

04/07/2022
DO: II
hrs: 1

Collection of Blood :

- It is a blood collection used on all labs to find out why symtoms are appear in the patient
- Phlebotomy ("to cut a vein" in Greek) is the process of making incision in a vein.
- A person who practices phlebotomy is termed as phlebotomist.
- Proper volume to be collected
  - "5 ml serum/plasma"
  - 1 ml of whole or un-centrifuged blood



Methods :

1. Capillary blood collection
2. Venous blood collection.

(1) Capillary blood collection :-

Blood from capillary network can be used to perform test for which only few drops of blood is required.

- Capillary blood is not recommended for those tests which require large amount of blood.

(I CT)

27/10/22

D.O: I

W: 5

Free Radicals in diseases

- Free Radicals are highly reactive substances produced continuously during metabolic Processes.

- The Participate mainly in physiological events such as the Immune Response, Metabolism of unsaturated fatty acids and inflammatory reaction.

- The balance between free Radicals and antioxidants is disrupted in many diseases.

- Free radical excess results in impairment of

1. DNA
2. Enzymes
3. Membranes

27/10/22

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P. PALANIAPPAN,
ASSIT. PROF OF BIOCHEMISTRY
J.J.C.

D \ H	1	2	3	4	5
D1		II BSC		II MSC	II BSC
D2	III BSC		II MSC		II BSC
D3		Lab		II BSC	IV MSC
D4		II MSC			II MSC
D5		II BSC			II BSC
D6		III BSC		II MSC	

Introduction to Endocrinology

Endocrinology is the study of hormones.
Hormones are essential for our every - day survival,

The control our temperature, sleep, mood, stress, growth and more.

Hormone is a chemical messenger that travels from one cell to another.

The endocrine system acts through chemical messengers called hormones that influence growth, development, & metabolic activities.

Endocrine Glands

- => Gonads
- => Pancreas
- => Adrenals
- => Thyroid
- => Parathyroids
- => Pituitary
- => Kidneys
- => Heart/blood
- => Liver

The Testes - Spermatogenesis

Spermatogenesis occurs in the coiled Seminiferous tubules

Spermatozoa are eventually released into the lumen of the tubules, where they migrate to the rete testis via Collecting ducts.

The Sepmatozoa are then drained from the rete testis via the vasa efferentia into the epididymis.

Coiled Seminiferous Tubules

Consists of a lumen surrounded by SERTOLI CELL connected by tight junctions in the periphery

Secondary Spermatocytes are released ie lumen LEYDIG CELL clusters.

Sertoli cells

Leydig cells

Dr. R. RAMESH
Assistant professor.
Department of Biochemistry.

FUNDAMENTALS of BIOLOGY (U3RIBCA1C4)

Unit I Biological classification:
Taxonomy

Taxonomy - Concepts of species of Hierarchical Taxa, Biological Nomenclature, classical and Quantitative Methods of Taxonomy, classification of Plants. Two and five kingdom systems - Salient features of various Plant Groups: Algae, Fungi, Bryophytes, Pteridophytes and Gymnosperms.

Unit II cytology:

Cell Biology - Structure of Plasmamembrane Lipid Bilayer, Active Transport, Electrical properties of Membranes. Structure and Function of cellular organelles - Cell Wall, Nucleus, Mitochondria, Golgi bodies, Lysosomes, Endoplasmic Reticulum, Vacuole, Peroxisomes, Vacuoles, chromosomes, chromatin, Mitosis and Meiosis and cell cycle.

Unit III GENETICS:

Inheritance Biology: Mendelian Principle,

Date: 21-11-2022

Hour: IV

Evolutionary forces for Evolution.

As long as a population maintains Hardy-Weinberg equilibrium, the evolutionary process cannot occur. Naturally, the rate of evolution is zero.

This deviation of the equilibrium is brought about by the following Evolutionary forces.

1) Mutation
2) Natural selection
3) Non-Random mating
4) Genetic Drift
5) Migration or Gene flow.

Dr. S. KANITHA
HEAD
DEPT. OF BIOCHEMISTRY
J.J. COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)

12/12/22

11 H8

INTRODUCTION:

Metabolism involves various chemical reactions that take place within a living organism.

METABOLISM

ANABOLISM CATABOLISM

Anabolic reactions involves the formation of macromolecules from the micromolecules.

It requires energy.

Catabolic reactions involves the breaking down of macromolecules to micromolecules.

It releases energy.

The energy produced in catabolic reactions could be used in anabolic reactions.

20/3/23
III HB

BRAIN METABOLISM:

The rate of O_2 consumption by an entire brain of average weight is about 49 ml/min (O_2).

It has the highest metabolic rate 240 kcal/kg/day.

Decrease in glucose & oxygen metabolic rates of brain cells occur during normal aging.

They are exacerbated further in disorders such as Alzheimer's, amyotrophic lateral sclerosis, Parkinson's & Huntington's diseases.

Brain metabolism depends on the continuous supply of glucose & oxygen to neuron & astrocytes.

In neurons, pyruvate arising from both glucose & lactate

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Date : 12/12/2022 Mode :- Chalk & Talk

Day order : I

Hour : 3 & 4

Topic : Collection of Blood specimens, Anticoagulant

It is a blood collection used in all labs to found out why symptoms are appear in a patient.

It is the process of making incision in a vein.

Method of collection :-

* Capilliary Blood collection
* Venous blood collection.

Anticoagulants :-

It is the substance that prevents blood from coagulation/ clotting.

- EDTA
- Sodium citrate
- Heparin

Date:- 21/03/23 Mode:- ICT

DO:- II

Hour:- 1, 4

Topic:- Pancreas function Test

This tests help to identify problems with our Pancreas and diagnose conditions such as Pancreatitis and cancer.

- Pancreas function tests measure pancreatic enzyme values.

- Imaging tests can help show inflammation or abnormalities affecting Pancreas.

Tests are:-

- Blood test
- Stool Test
- Abdominal ultrasound
- (MRCP)
- computed tomography scan
- Secretion stimulation test
- Endoscopic Ultrasound
- ERCP

21/3/23

P. PALANIDPPAN,
Dept. of Biochemistry

D/H	1	2	3	4	5	6
1		I MSc		III BSc		
2		III BSc			Lab	
3	I MSc		III BSc			
4	III BSc			EVS		I MSc
5	III BSc			I MSc		
6	III BSc	I MSc			III BSc	

Date: 12/12/2022
H/O V - I

Introduction

Biotechnology is the application of knowledge of living systems for paractical & Industrial purposes. in 1919

An all - inclusive definition of Biotechnology is any technique that use living organisms to make (or) modify a product, to improve plants (or) to develop microorganisms for scientific uses.

Histroy of Biotechnology

Even today farmers & gardeners Crossed plants to produce hybrids for better yields & Utilities.

Biotechnology methods

food preservation,

pickling

fermentation,

pasteurization

Date:-
23/3/23
Q6:
II - II

Transgenic Plants

Transgenic plants are pest resistant able to survive under stressful conditions and obtain greater yield.

⇒ Plant modified organisms where gene are transformed from one organism to another through genetic engineering technique.

Bacillus thuringiensis crops.

A few examples of transgenic plants are Bt cotton, Bt corn, Bt potato and Bt tobacco.

These plant are genetically the engineered to posses endotoxin,

Bt brinjal was the first transgenic crop developed in India.

Dr. M. SATHIYAN
Assistant professor
Department Biochemistry

D / H	1	2	3	4	5
D_1		III B5			
D_2				III B2	
D_3				III B2	
D_4		III B2			
D_5				III B4	
D_6			III B1		

15/12/22
D/o I
H. II

Photosynthesis

Nlode I...

* Synthesis of organic compounds from inorganic raw materials by green plants in the presence of light

$$CO_2 + 2H_2O \xrightarrow{light} (CH_2O)_n + H_2O + O_2$$

only 0.2 % of the light energy failing on earth is utilised by photosynthetic organisms.

* Cyanobacteria where photosynthesis was first appeared.

* Aristotle : plants get their food only from soil.

3/3/23

D/o:2

Transgenic plants

Model: Chalkand Talc

* Transgenic plants are those plants, which carry additional, stably integrated and expressed, foreign genes from transpecies. The whole process involving introduction, integration and expression of foreign gene in the host is called genetic transformation. The Combined use of recombinant technology, gene transfer method and tissue culture techniques

3/3/23

Dr. R. RAMESH.
Assistant Professor
Department of Biochemistry

Date : 12-12-2022 Day order : I Hour : V

Mode : Chalk and Talk method.

Introduction to Genetics

The word Genetics : Was derived from the Greek root. Gen which means to become (or) to grow into and it was coined by Bateson in 1906 for the study of physiology of heredity and variations.

It is also called Inheritance Biology

The heredity and variation play an important role in the formation of New species. (Speciation).

The Biological science which deals with the mechanism of heredity and causes of variation in living beings (Virus, Bacteria, Plants and Animals) is known as Genetics.

Geneticists study all aspects of Genes. The study of the mode of Gene transmission from one Generation to another Generation Broadly called transmission Genetics.

Gregor Johann Mendel (1822-1884)

Date: 23-03-2023 Day-Order: I Hour: 4

Mode: Chalk & Talk.

Reverse Transcription.

Some of the viruses - known as Retro-viruses - possess RNA as the Genetic Material.

These viruses cause cancers in animals, Hence known as oncogenic.

They are actually found in the Transformed cells of the tumors.

The Enzyme RNA dependent DNA polymerase (or) Simply Reverse Transcriptase - is responsible for the formation of DNA from RNA.

This DNA is Complementary (cDNA) to viral RNA and can be Transmitted into Host DNA.

3' —— 5' viral RNA

5 —— primer ↓ Reverse Transcriptase

3' —— 5' RNA

5' —— 3' DNA

Retroviruses use the Reverse Transcription of RNA Virus.

mRNA can be template for synthesis of double

23/3/23

Raghavi. V
Assistant Professor
Department of
Biochemistry

D / H	1	2	3	4	5
D_1			III B.Sc		III B.Sc
D_2			III B.Sc		
D_3	III B.Sc		III B.Sc		III B.Sc
D_4	III B.Sc			III B.Sc	III B.Sc
D_5		III B.Sc			III B.Sc
D_6	←	II B.Sc		→	III B.Sc

Date :- 12/12/22 Hrs :- III, IV

Day :- I Mode :- Chalk & talk

Immunology

Immunity is the ability to resist damage from foreign substances such as microorganisms and harmful chemicals such as toxins released by microorganism

The ability to ward off disease through our defense is called resistance.

It is resistance which an individual possesses by virtue of his/her genetic and body constitution.

Thus, it is inborn.

The body is born with the ability to recognize and destroy certain foreign substances, but the ability to destroy them does not improve each time the body is exposed to them due to lack of immunological memory.

Date :- 23/3/23 Hrs :- III. IV

Day Order :- 1 Mode :- ICD

Serum Sickness

Serum sickness is a reaction that is similar to an allergy. The immune system react to medicines that contain protein used to treat immune conditions. It can also react to antiserum, the liquid part of blood that contains antibodies given to a person to help protect them against germs/poisonous substances.

Symptoms ?

Serum sickness usually develops in several days to 3 weeks of being exposed to the medication antiserum, but it may develop as quickly as one hour after exposure in some people.

3 main symptoms.

→ Fever → Painful swollen joints