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NEHA SHARMA

CCE



श्री सत्य साई महिला महाविद्यालय, भोपाल
Sri Sathya Sai College for Women, Bhopal
An Autonomous College affiliated to Barkatullah University, Bhopal
NAAC द्वारा 'ए' ग्रेड प्राप्त/ Accredited 'A' Grade by NAAC

क्रमांक /S.No.

04323

(AUTO)
SSSWC

सतत् मूल्यांकन उत्तर पुस्तिका / CCE ANSWER BOOK

अनुक्रमांक अंकों में (Roll No. in figures)

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अनुक्रमांक (शब्दों में)
Roll No. (in words)

परीक्षा का नाम
Name of Examination B.Sc. ~~HP~~ FINAL YEAR

विषय
Subject BOTANY प्रश्न-पत्र
Paper PAPER I & II

दिनांक
Date 21 MARCH 2022 दिन
Day WEDNESDAY

संलग्न पूरक उत्तर पुस्तिकाओं की संख्या
No. of Supplementary Answer Books

नामांकन क्रमांक (Enrollment No.)

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संलग्न पूरक उत्तर पुस्तिकाओं के क्रमांक
S.No. of Supplementary Answer Books

प्राप्तांक (अंकों में) Marks Obtained (in figures) 5/5 - 3/5	प्राप्तांक (शब्दों में) Marks Obtained (in words)	परीक्षक के हस्ताक्षर/ Signature of Examiner R.S.	वीक्षक के हस्ताक्षर/ Signature of Invigilator
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कृपया यहाँ से लिखें / Please write from here

PAPER - I

Ques 1- Write detail notes on Calvin cycle?

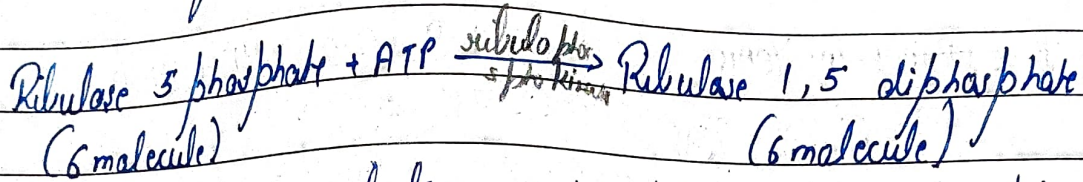
Calvin cycle discovered by Calvin-Benson, that is the reason it is known as Calvin cycle.

It is also known as C_3 cycle because the first stable compound form in this reaction is 3-carbon compound that is Phosphoglyceric acid.

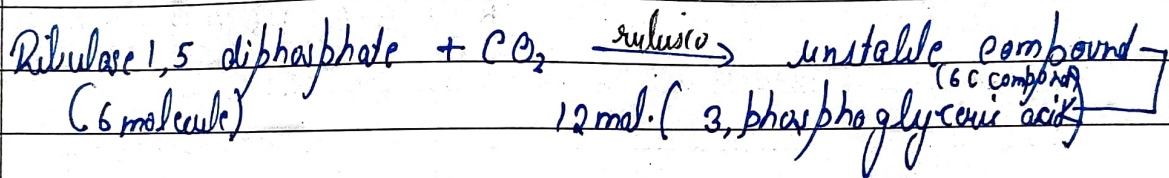
It is a dark reaction, as for this there is no need of light or it is independently synthesize.



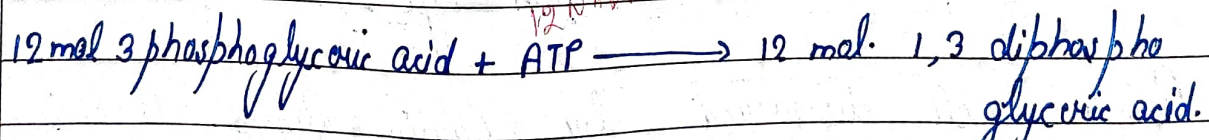
The various process of Calvin cycle are as follow-



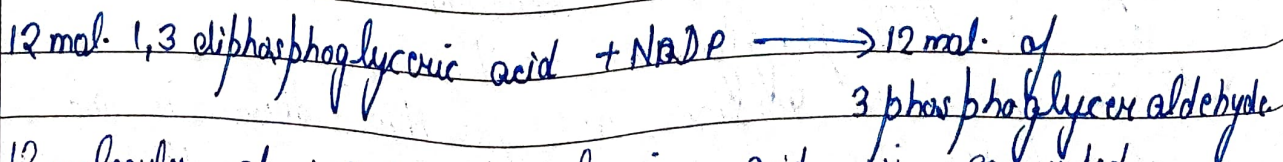
6 molecules of ribulose 5 phosphate are phosphorylated and converted into ribulose 1,5 diphosphate that is also 6 molecule compound.



Ribulose 1,5 diphosphate is supplied with CO_2 to form a unstable 6 carbon compound that is readily breaks into 12 molecules of 3, phosphoglyceric acid



12 molecules of 3 phosphoglyceric acid is phosphorylated with ATP to form 12 molecules of 1,3 diphosphoglyceric acid.



12 molecules of 1,3 diphosphoglyceric acid is converted hydrolysed to form 12 molecules of 3 phosphoglycer aldehyde.

5 mol. 3 phosphoglyceraldehyde \longrightarrow 5 mol. ~~di~~ dihydroxyacetone phosphate
 From 12 molecules formed earlier 5 molecules are used to form 5 molecules of dihydroxyacetone phosphate.

3 mol. phosphoglyceraldehyde + 3 mol. of dihydroxyacetone phosphate \longrightarrow
 3 mol. fructose 1,6 diphosphate

From above 12 molecules of phosphoglyceraldehyde, 3 more molecules were used with 3 molecules of dihydroxyacetone phosphate to form 3 molecules of fructose 1,6 diphosphate.

3 mol. fructose 1,6 diphosphate + NADP^+ \longrightarrow 3 mol. fructose 6 phosphate + NADPH
 In the next step fructose molecules is hydrolysed to form 3 fructose 6 phosphate.

Now, 4 molecules of fructose 6 phosphate is used up in sugar making.

2 mol. fructose 6 phosphate + 2 mol. phosphoglyceraldehyde \longrightarrow

2 mol. of erythrose 4 phosphate + 2 mol. xylulose 5 phosphate
 2 molecules each of fructose 6 phosphate and phosphoglyceraldehyde are react to form 2 mol. each of erythrose 4 phosphate and 2 molecules of xylulose 5 phosphate.



~~2 mol. xylase 5 p~~
 2 mol. erythrose 4 phosphate + 2 mol. dihydroxyacetone phosphate

→
 2 mol. seduheptulose 1,7 diphosphate.

2 molecules each of erythrose 4 phosphate and dihydroxyacetone phosphate form 2 molecules of seduheptulose 1,7 diphosphate.

2 mol. seduheptulose 1,7 diphosphate + NaDP → 2 mol. of seduheptulose 7 phosphate + NaDP_2

2 molecules of seduheptulose 1,7 diphosphate are hydrolysed to form 2 mol. of seduheptulose 7 phosphate.

2 mol. phosphoglyceraldehyde + 2 mol. seduheptulose 7 phosphate → 2 mol. xylase 5 phosphate + 2 mol. ribose 5 phosphate.

When two molecules each of phosphoglyceraldehyde and seduheptulose 7 phosphate react they form 2 mol. of xylase 5 phosphate and 2 mol. of ribose 5 phosphate.

2 mol. ribose 5 phosphate → 2 mol. ribulose 5 phosphate.
 It is readily converted to 2 mol. of ribulose 5 phosphate.

4
Ad

Free-



~~2 mol. xylase 5 phosphate~~
 2 mol. erythrose 4 phosphate + 2 mol. dihydroxyacetone phosphate



2 mol. seduheptulose 1,7 diphosphate.

2 molecules each of erythrose 4 phosphate and dihydroxyacetone phosphate form 2 molecules of seduheptulose 1,7 diphosphate.

2 mol. seduheptulose 1,7 diphosphate + NADP^+ → 2 mol. of seduheptulose 7 phosphate + NADPH_2

2 molecules of seduheptulose 1,7 diphosphate are hydrolyzed to form 2 mol. of seduheptulose 7 phosphate.

2 mol. phosphoglyceraldehyde + 2 mol. seduheptulose 7 phosphate
 → 2 mol. xylase 5 phosphate + 2 mol. ribulose 5 phosphate.

When two molecules each of phosphoglyceraldehyde and seduheptulose 7 phosphate react they form 2 mol. of xylase 5 phosphate and 2 mol. of ribulose 5 phosphate.

2 mol. xylase 5 phosphate → 2 mol. ribulose 5 phosphate.
 It is readily converted to 2 mol. of ribulose 5 phosphate.

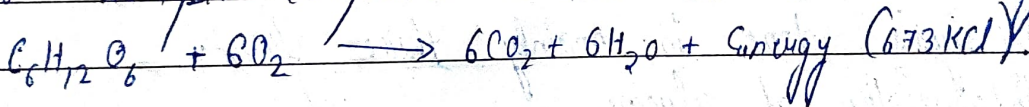
4 mol. xylulose 5 phosphate \rightarrow 4 mol. of ribulose 5 phosphate.
 Adding 2-2 molecules of xylulose 5 phosphate to form 4 molecules of ribulose 5 phosphate.

4 mol. ribulose 5 phosphate + 2 mol. ribulose 5 phosphate
 \rightarrow 6 mol. ribulose 5 phosphate

As we get 6 mol of ribulose 5 phosphate ~~out~~
 again phosphorylated to form 6 molecules of ribulose
 1,5 diphosphate and cycle will go on.

Ques- Write a detail note on glycolysis?

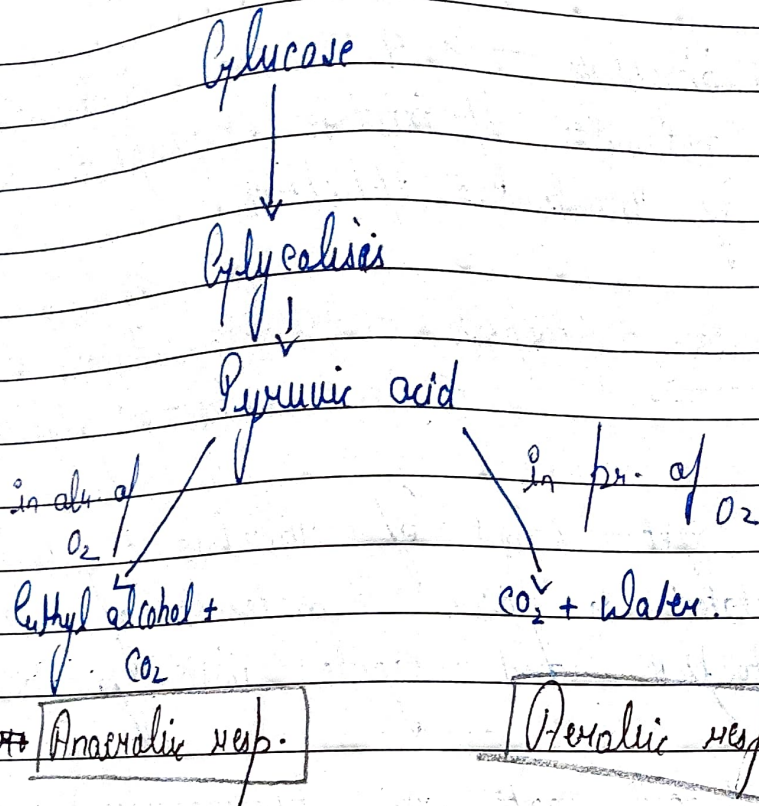
In respiration, the breakdown of complex compound into simpler compound in the to obtain energy.



Glycolysis is the breakdown of glucose, it can occur in both phases ~~to~~ whether aerobic or anaerobic.

There is no need of oxygen for this process. Aerobic and anaerobic respiration in both to process glycolysis is same.

In the formation of pyruvic acid from glycolysis depend the fate of organism to form aerobic or anaerobic ~~or~~ respiration.



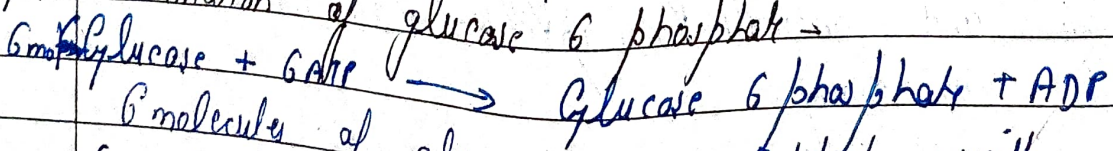
Various stages of glycolysis are -

Glycolysis done in mainly three phases -

- i) Phosphorylation of glucose.
- ii) Splitting up of fructose molecules.
- iii) Formation of pyruvic acid.

1) PHOSPHORYLATION OF GLUCOSE -

* Formation of glucose 6 phosphate -



6 molecules of glucose are added with 6 molecules of ATP to form Glucose 6 phosphate.

Formation of Fructose 1,6 diphosphate.
 Phosphorylation of glucose 6 phosphate -
 $2 \text{ molecules of glucose 6 phosphate} + \text{ATP} \rightarrow \text{Glucose 1,6 diphosphate} + \text{ADP}$
 6 molecules of glucose 6 phosphate are added with
 and ADP to form Glucose 1,6 diphosphate

Formation of fructose 6 phosphate -
 $\text{Glucose 1,6 diphosphate} + \text{NADP} \rightarrow \text{Fructose 1,6 diphosphate} + \text{NADPH}_2$
 Glucose 1,6 diphosphate is converted into fructose 6 phosphate.

2) Structure of Fructose Molecule -

Splitting of molecules -
 $6 \text{ mol. fructose 1,6 diphosphate} \rightarrow 3$
 $3 \text{ mol. phosphoglyceraldehyde} \leftrightarrow 3 \text{ mol. of dihydroxy acetone phosphate}$
 The molecules of fructose 1,6 diphosphate is split up into
 2 compound of 3 molecules each which can be interchangeable.

3) FORMATION OF Pyruvic Acid -

$3 \text{ mol. phosphoglyceraldehyde} + \text{H}_2\text{PO}_4 \rightarrow 1,3 \text{ diphosphoglyceric acid}$
 3 molecules of phosphoglyceraldehyde are hydrolyse to form
 1,3 diphosphoglyceric acid molecule.



* Formation of 1,3 diphosphoglyceric acid - (3 molecules)
 $3 \text{ mol of } 1,3 \text{ diphosphoglycerate} + \text{NADP} \rightarrow 1,3 \text{ diphosphoglyceric acid} + \text{NADP}^+$

1,3 diphosphoglycerate is reacted with NADP to form 3 molecules of 1,3 diphosphoglyceric acid and NADP⁺

* Formation of 3 phosphoglyceric acid -

$1,3 \text{ diphosphoglyceric acid} + \text{ADP} \rightarrow 3 \text{ phosphoglyceric acid} + \text{ATP}$
3 molecules of 1,3 diphosphoglyceric acid is converted into 3 molecules of phosphoglyceric acid with the formation of [ATP]

* Formation of 2 phosphoglyceric acid -

3 phosphoglyceric acid ~~is~~ ^{forms} 2 phosphoglyceric acid
In this ~~is~~ 2 molecules of phosphoglyceric acids are formed from 3 phosphoglyceric acid.

* Formation of ~~phosphoenol~~ pyruvic acid.

2 mol. (phosphoglyceric acid) ~~is~~ ^{forms} 2 mol. (phosphoenol pyruvic acid)

2 mol. phosphoenol pyruvic acid ~~is~~ ^{transfers} 2 mol. pyruvic acid.

2 molecules of pyruvic acids are formed from ~~2 molecules~~ 1 molecule of glucose ~~is~~
3 carbon compound is formed in 6 carbon compound.

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प्रश्न-पत्र
Paper

अनुक्रमांक (शब्दों में)
Roll No. (in words)

दिन
Day

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 पुस्तिकाओं की संख्या
 Elementary Answer Books

नामांकन क्रमांक (Enrollment No.)

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 पुस्तिकाओं के क्रमांक
 Elementary Answer Books

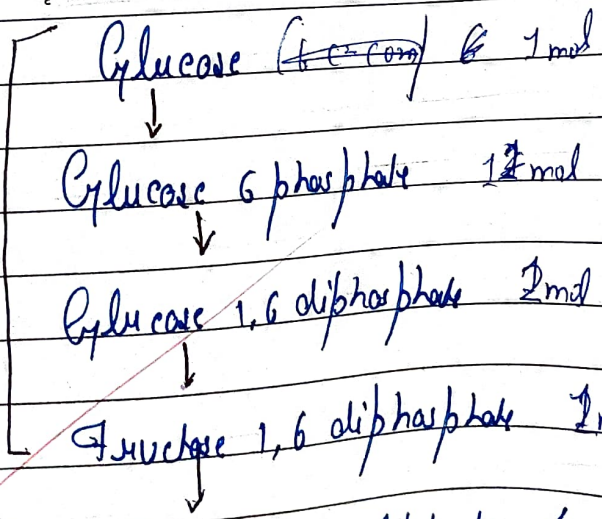
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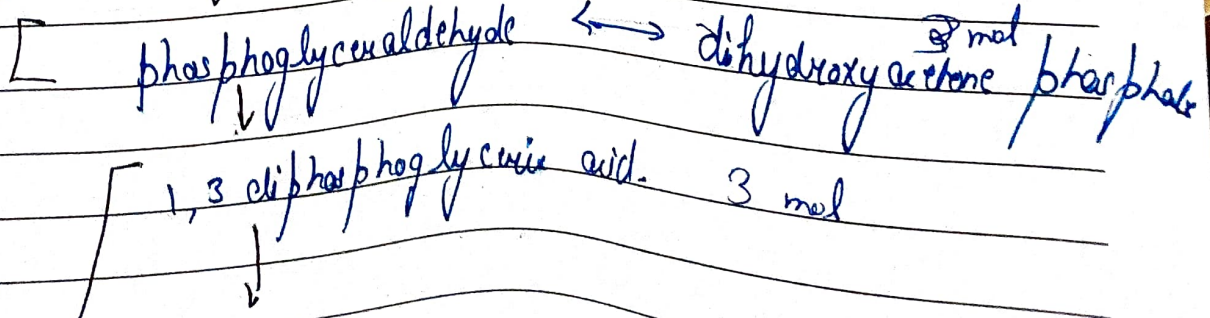
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Phosphorylation
of glucose

25



Splitting up
of molecule





Formation
of
Pyruvic
acid

1,3 diphosphoglyceraldehyde (3 carbon molecule)
↓

3 phosphoglyceric acid (3 mol)
↓

2 phosphoglyceric acid (2 mol)
↓

Phosphoenol pyruvic acid (2 mol)
↓

Pyruvic acid (2 mol)

Unit 7 - Life like detail notes on Cytoplasmic inheritance

Synopsis -

* Introduction

* History

* Difference

* Characteristics of cytoplasmic inheritance and nuclear inheritance

* Example - *Mirabilis jalapa* (Leaf variegation)
Mitochondrial segregation (wild and petite in yeast)
Male sterility

INTRODUCTION -

Cytoplasmic inheritance is the inheritance of genes present on the cytoplasm that is mitochondrial genes (or chondriom genes) and plastid genes (leucoplast)

The genes of cytoplasmic inheritance is known as chloroplast and the whole genes (group of genes) is known as plastid genes.

It had a major effect of mother side.

It is known in various names as - extrachromosomal inheritance, maternal inheritance etc.

HISTORY

Roux and Perron were first to find cytoplasmic inheritance in *Muscalicia fallax* '4' clock plant. After that John E. Birch and study it in *Neurospora crassa* (mold plant).

DIFFERENCE B/W CYTOPLASMIC AND NUCLEAR INHERITANCE

Cytoplasmic inheritance

Nuclear inheritance

- | | |
|--|--|
| * Genes that inherit present of organelle. | Genes that inherit present on nucleus. |
| * It Does not follow mendelian rules. | They follow mendelian rules. |
| * Reciprocal cross is different. | Reciprocal cross is same. |
| * Maternal influenced | Both parents participate equally. |

~~Parent~~

CHARACTERISTIC - ♀

Reciprocal cross is not same -
~~Recip~~ When we change the gender, we cannot get the same result as it is maternal influenced.

Does not obey Mendel's law -
 It does not follow 3 laws given by Mendel.

Maternal influenced -

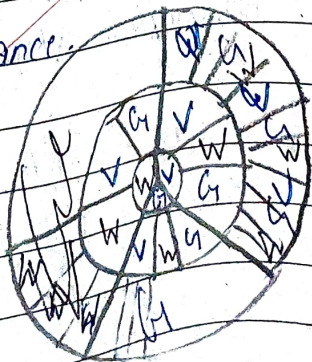
Cytoplasm of female is inherited more than male so it is maternal influenced.

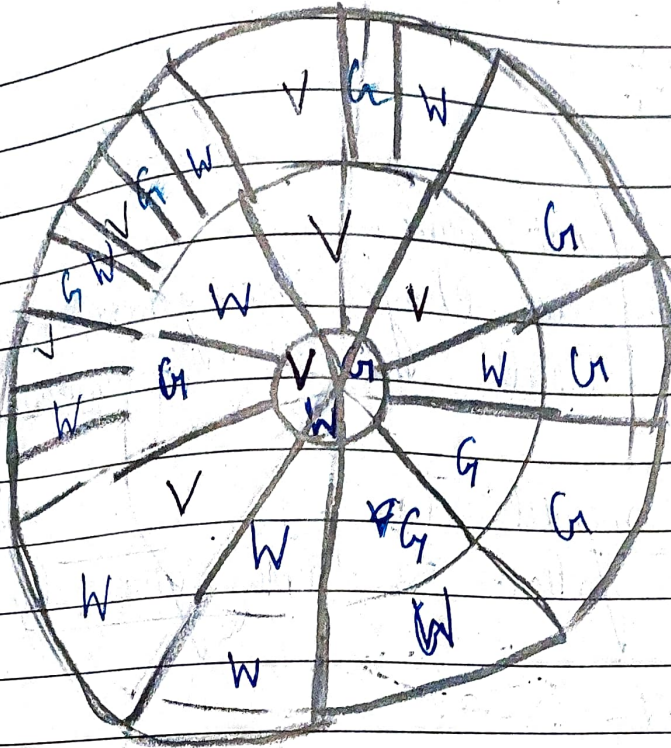
EXAMPLE (MIRABILIS JALAPA) 4 o'clock →

It is a plant which has 3 types of leaves.

- * green leaves
- * white leaves
- * variegated leaves.

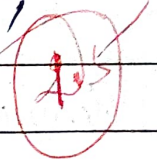
It is a cytoplasmic inheritance that will in plastid inheritance.





Male - ?
 Female - ?
 Offspring - ?

Overall it does not depend on male, whether male is white, green or variegated, it will show phenotype of female.



TRANSCRIPTION -

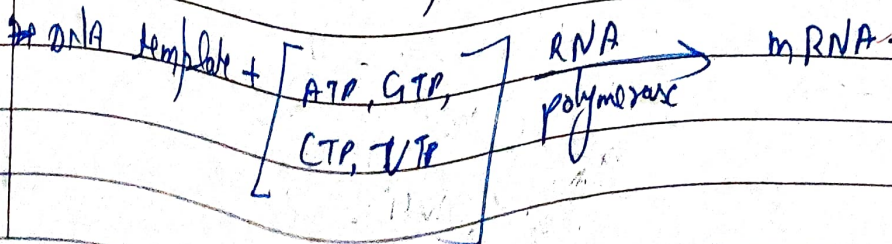
Basic require \times Template, ATP, GTP, CTP, UTP, divalent mg^{++} RNA polymerase

- 1) Activation of amino acid.
- 2) The factor

Core enzyme + sigma factor.

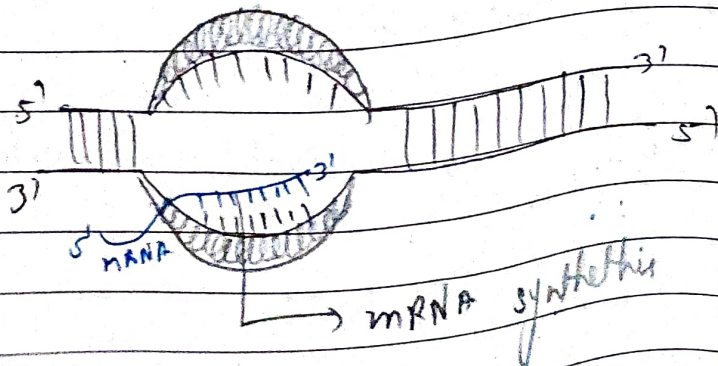
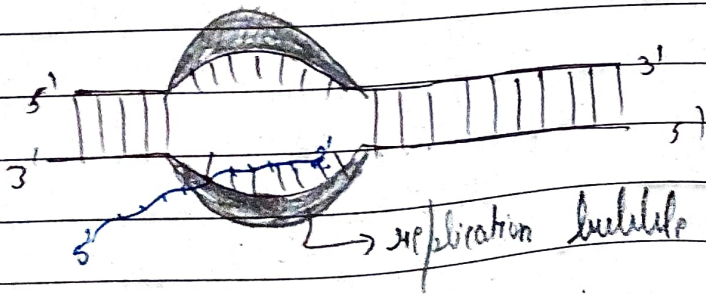
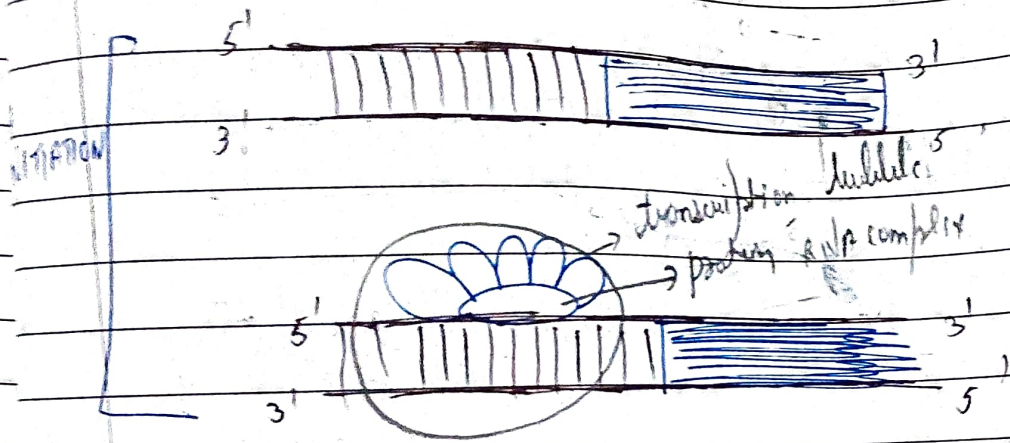
The factor in form binds core & sigma factor recognize the starting site (promoter) and stick RNA polymerase.

- 3) Initiation of transcription starts here.
- 4) Elongation



TRANSCRIPTION

Transcription is a process in which the formation of m-RNA from DNA takes place.

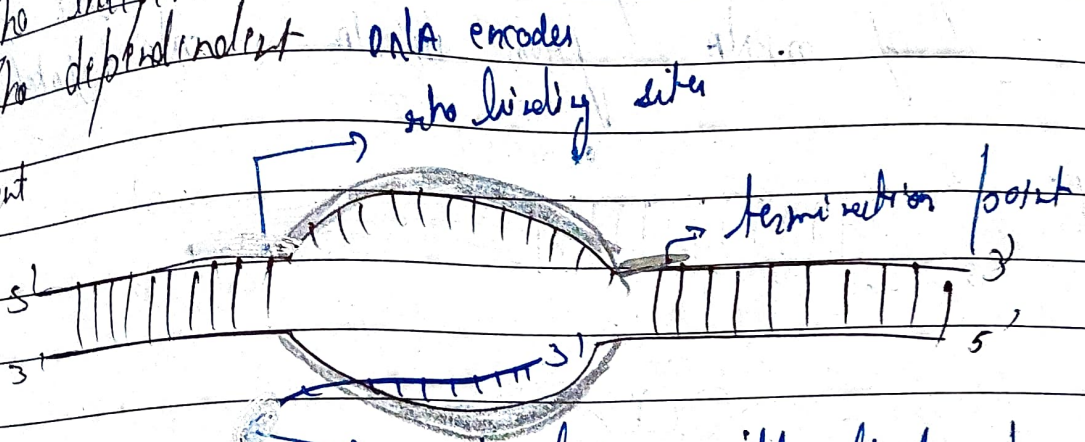




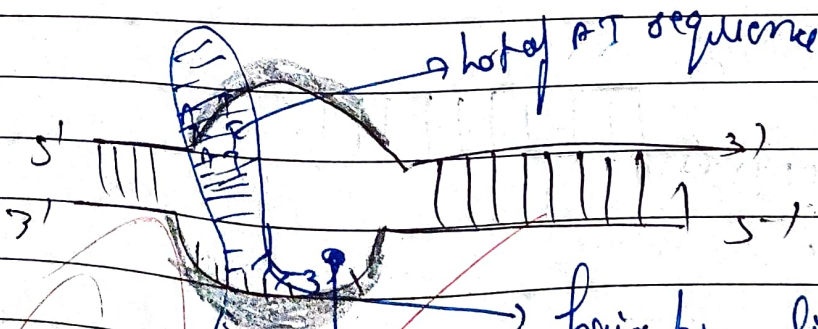
Termination of two types →

- 1) Rho independent
- 2) Rho dependent

Rho dependent



rho factor will climb up with mRNA and form disturbance for sometime RNA polymerase will stop and rho factor will terminate.



lot of GC sequence. GC bond is weaker break and mRNA is found



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परीक्षा का नाम
 Name of Examination B.Sc III YEAR

अनुक्रमांक अंकों में (Roll No. in figures)

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विषय
 Subject Microbiology
 प्रश्न-पत्र
 Paper I & II

अनुक्रमांक (शब्दों में)
 Roll No. (in words)

दिनांक
 Date 1/3/21
 दिन
 Day

संलग्न पूरक उत्तर पुस्तिकाओं की संख्या
 No. of Supplementary Answer Books

नामांकन क्रमांक (Enrollment No.)

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संलग्न पूरक उत्तर पुस्तिकाओं के क्रमांक
 S.No. of Supplementary Answer Books

प्राप्त अंक (अंकों में) Marks Obtained (in figures) 5	प्राप्त अंक (शब्दों में) Marks Obtained (in words) five	परीक्षक के हस्ताक्षर/ Signature of Examiner	वीक्षक के हस्ताक्षर/ Signature of Invigilator
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PAPER - II

Q.2) The establishment and growth of the pathogen or the antigen inside the cell of host are called as pathogenesis.

PORTAL OF ENTRY :-

The pathogen enters the body of the host through skin abrasions, wounds, cuts or boils.

MECHANISM OF PATHOGENICITY

ADHERENCE AND COLONIZATION BY PATHOGEN

The host has its own microflora. The pathogen entering the body needs to compete with the normal microflora.

There are highly specialized structures (flagella, pili, fimbriae, receptors, etc.) present on the surface of pathogen. They bind to the receptors present on the cells of host and helps in colonization.

These specialised structures are called as adherence factors or adhesins.

PENETRATION BY PATHOGEN.

After entering the the epithelial cells of host, it penetrates the tissues of the same by:-

- 1) Secreting ~~lyso~~ lytic substances to destroy the cell.
- 2) Secreting of endotoxins and exotoxins that degrade the cell wall of host's cell.
- 3) Degradation of carbohydrate-protein complex.

The pathogen secretes some enzyme/substance to facilitate movement inside host cell or tissues: They are:-

• Coagulase by Staphylococcus aureus that protects pathogen from phagocytosis & defense mechanism of host.

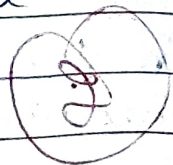
• Collagenase by Clostridium sp. that destroys collagen & facilitates movements.

• GROWTH AND MULTIPLICATION

↳ Once it penetrates it enters the lymphatic ^{capillaries} ~~vessels~~ which are connected to larger lymphatic vessels. These vessels are connected to blood circulatory system.

↳ Through blood it enters various parts of the body. But there are specific areas where pathogen can grow and multiply like intestine, liver, stomach, blood. In case of toxins released in blood, a condition occurs called as septicemia.

↳ The pathogen grows and multiplies and takes up all the nutrition of the host.



SEC - B

(Q.2) The inflammation of the walls of liver due to a virus is called as Hepatitis.
 Five Nine viruses are known to cause hepatitis.

part of which two are pleepr and Epstein-Barr, rest are hepatotropic.

1) HEPATITIS - A (hepatitis)

- Infectious
- causative \rightarrow HAV (hepatitis - A Virus)
- Family - Picorna - viruson family.
- Genome - ss RNA
- Viruson - 27 nm diameter
- shape - spherical
- transmission: faecal - oral route
- Hepatitis virus
- sensitive to heat with 70% above.
- Stable growth at 60°C.

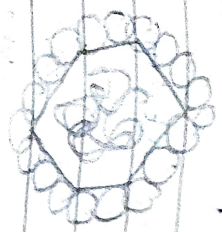
PATHOGENESIS :-

incubation period \rightarrow 2 weeks to 8 weeks.

After ~~the~~ ingestion of contaminated food with HAV firstly infects gut cells and then reaches the target i.e., parenchymal cells of liver. It remains and multiplies in Kupffer cells and from these reaches to rest of organs of the body.

Symptoms \rightarrow Fever, fatigue, headache, loss of

Stab diag - RIA, ELISA
Molecular - Nucleic acid hybridisation



HEPATITIS - B. (Serum hepatitis)
Causative \rightarrow HBV

\rightarrow Orthohepadna family.

\rightarrow 42 nm diameter

\rightarrow spherical

\rightarrow ~~SP~~ STD 1 Parental transmission.

\rightarrow Enveloped Virus. with surface antigen (HBsAg)

• STRUCTURE

- 2 components \rightarrow spherical

\rightarrow long tubules and filaments present in unenveloped form.

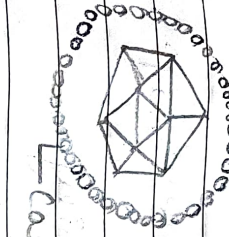
\rightarrow Detailed study Done hence called Davis particles.

\rightarrow PATHOGENESIS & SYMPTOMS

\rightarrow Primary infects the liver cells (hepatic cells)

\rightarrow Hence bilirubin in released into blood

and accumulated urine, knee joints
 a yellowish appearance to skin, eyes,
 faeces etc.
 Proctache, abdominal pain, vomiting,
 jaundice etc.



*** Hepatitis - C**
 (non-A, non-B)

- ↳ HCV
- ↳ Flaviviridae family
- ↳ ss-RNA
- ↳ 30-60 nm diameter
- ↳ spherical shape
- ↳ enveloped virus (no surface antigens)
- ↳ Parental and STD transmission.
- ↳ can be chronic and may cause cancer.
- ↳ Incubation → 40 to 120 days

TRANSMISSION → blood transfusion,
 contaminated needles of
 drug use and equipm-
 ents and bodily
 secretions.

*** HEPATITIS - D**
 (Delta agent)

- ↳ HDV
- ↳ unclassified to any group.

Structure similar to plant virus.

SS RNA

35 nm diameter.

spherical shape

enveloped virus with HBsAg surface antigen.

Horizontal & STD transmission

Water - borne transmission

Incubation - 6 months - 16 weeks.

HEPATITIS - E

[centric non-A, non-B]

HEV

SS RNA

27 - 38 nm in diameter.

icosahedral symmetry

Non-enveloped virus

Faecal-oral transmission through contaminated

food & water.

Incubation - 2 to 10 weeks.

PREVENTION (PROPHYLAXIS) AND CONTROL.

1) Always maintain hygiene in public places that are near food stalls. If not, avoid eating from such places that have flies, mosquitoes or other insects.

2) Always have homogeneous sexual practices and use protection like condom and condoms.



- the same ~~symptoms~~ / ~~in case~~ / ~~in case~~
- If symptoms start to appear, in case of Hepatitis A, get administered with antibodies like IgG, within in case of Hepatitis B - take IgG, IgM
- Always get treated in case of symptoms and get vaccinated with the ~~antibodies~~ antibodies of Hep-A & B
- Vaccine for Hep-C hasn't been developed yet.

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