Vivekanand College (Autonomous), Kolhapur
Department of Microbiology
Notice of the Internal Exam
B.Sc.I Sem II

Date: 5th April, 2023

All the students of B. Sc. I Microbiology are hereby informed that the Internal Exam of Microbiology is scheduled on 20th April, 2023 at 9:30 am in class room no. 64 . Please make it convenient to be present on time. Topics are as follows-

Sr. No.	Title of Paper	Topic
1	Paper III: Basic Biochemistry	All syllabus covered till 5th April, 2023
2	Paper IV: Applied Microbiology	All syllabus covered till 5th April, 2023

Question Paper Format: (Same format for both papers)

Q.1 Select the correct alternative from the following. 5 marks

Q. 2 Long question (Any 1) 10 marks

Q.3 Write a short notes on (Any 1) 5 marks

Total- 20 marks

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Vivekanand College (Autonomous), Kolhapur
Department of Microbiology
Internal Exam
B.Sc.I Sem II
Paper III

Total Marks: 20

Date: 20/04/2023 **Time: 9.30-10.30**

Q.1 Select the most correct alternative from given alternatives. **5**

i. _____ bond is the strongest among all non-covalent interactions.

a) Electrostatic b) Hydrogen c) Van der Walls d) Hydrophobic

ii. _____ is a sulfur containing amino acid.

a) Proline b) Glycine c) Valine d) Methionine

iii. _____ type of medium is also known as imperical medium.

a) Synthetic b) Natural c) Complex d) Selective

iv. The MacConkeys agar is a selective medium due to the presence of_____

a) Peptone b) Meat extract c) Sodium taurocholate d) Sodium Chloride

v. VP test is used to detect_____ production ability of organisms.

a) Acetoin b) Citrate c) Indole d) Acid

Q. 2 Attempt any one **10**

i. Describe in detail secondary structure of proteins.

ii. Describe classification of bacteria on the basis of carbon and energy source.

Q.3 Attempt any one **5**

i. Macro-elements and Micro-elements

ii. General structural properties of amino acids.

Vivekanand College, Kolhapur [Autonomous]
Department of Microbiology
B. Sc. I
Internal Exam
Paper IV- Applied Microbiology

Date: 20th April 2023 Marks: 40

Time: 9.30am to 11.30am

Q.1.Choose the correct alternative and rewrite the sentence. **5**

1..... is used to increase the rate of sedimentation in water.

a. Calcium chloride b. Ammonium cloride

c. Alluminium sulfate d. Ammonium sulfate

2. ..... organism is refered as indicator of fecal pollution.

a. *Bacillus subtilis* b. *E. coli* c. *Salmonella typhi* d. *Aerobacter aerogens*

3. The platinum catalyst is present in.....

a. Brewer's anaerobic jar b. Anaerobic Gaspack system

c. Candle jar d. Anaerobic chamber

4. A risk of genetic changes as well as contamination is usually associated with the ..... method of culture preservation.

a.Sub-culturing b. Paraffin c.Refrigeration d. Freeze drying

5. Amino acids are joined together by ..... bond.

a. Peptide b. Glycosidic c.Hydrogen d. Ester

Q.2 Long answer question. (Any one) **10**

1. Explain various Municipal water purification processes.

2. Explain in detail various pure culture techniques.

Q.3 Short note. (Any One) **5**

1. Anaerobic chamber

2.Confirmed test

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Shri Swami Vivekanand Shikshan Sanstha's

Vivekanand College, Kolhapur (Autonomous)

Department of Microbiology

B.Sc. I Internal Exam **Date: 20/04/2023**

Sr. No.	Name of students	Roll No.	
1	Abrange Vaishnavi Vinod	7490	V.V.Abrange
2	Aivale Pooja Birdev•	7491	PAjivale.
3	Amane Shantanu Krishnat	7492	
4	Bune Mansi Krishnat	7494	Ab
5	Chougale Sanika Vishnu	7496	S.V.C
6	Dindayal Prabodhini Raju	7498	P.R.Dindayal
7	Dinde Ankita Rangrao	7499	A.R.D
8	Gaikwad Divya Sanjay	7500	Dgaikwad
9	Gaikwad Nikita Nandkumar	7501	Gaikwad
10	Gulabani Bhakti Amar	7503	
11	Hajare Aishwarya Ganesh	7505	Hajare
12	Jadhav Karan Dipak	7506	KDJadhav.
13	Jadhav Shruti Shivraj	7507	Ab
14	Jasud Rutuja Tanaji	7508	Rjasud
15	Kachare Ishwari Pradeep	7509	Ishwari
16	Kamat Sanskruti Santosh	7510	Kamat
17	Khanvilkar Anjali Hemant	7513	@khanvilkar
18	Kharade Pratiksha Sharad	7514	Ab
19	Kharade Sanchit Sachin	7515	Skharade.
20	Khot Vaishnavi Jitendra	7516	Khot
21	Koli Vedanti Vijay	7517	Ab
22	Korane Harshad Mahesh	7518	Hkorane
23	Kulkarni Sai Vivek	7519	Kulkarni
24	Ligade Smeet Sunil	7520	Sligade.
25	Mane Rohan Baban	7521	RBmane
26	Mujawar Aabida Altaf	7523	Almujawar
27	Murti Vanshita Sanjay	7526	Murti
28	Parulekar Diksha Devdatta	7528	Parulekar.
29	Patil Avantika Arun	7529	DAPatil.

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Mr. S.D. Gabale – Class.

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30	Patil Sakshi Satappa	7530		
31	Patil Samruddhi Sanjay	7531		13
32	Patil Sharwari Yuvraj	7532		13
33	Patil Suhani Sadashiv	7534		12
34	Patil Tejas Tukaram	7535		01
35	Powar Diya Kiran	7537		11
36	Prabhu Savali Shivaji	7538		10
37	Sanadi Firdos Shakil	7539		15
38	Shaikh Mushfira Balu	7540		11
39	Shelke Yogesh Balu	7541		8
40	Shewale Prithviraj Subhash	7542		12
41	Todkar Nirjara Shivaji	7544		3
42	Vaze Sai Abhijit	7545		8
43	Wadkar Samrudhi Dhanaji	7546		15
44	Yadav Sushant Harishchandra	7547		17
45	Yatam Ashutosh Bhagvan	7548		8
46	Hardikar Yogi Ashutosh	7549		16
47	Athale Arjun Asit	7559		16
48	Sonule Sushant Krishnat	7568		18
49	Bhosle Vedika Sudhir	7573		14
50	Patil Gaytri Tanaji	7575		
51	Mali Prachi Sanjay	7576		10
52	Shaikh Rizwan firoj	7445		17
53	Sutar Sakshi Chndrakant			
54	Majgavkar Sanika Sagar	7525		9
55	Shaikh Suhana Tipusultan	7447		
56	Patil Kartigraj Bhagwan	7533		15
57	Jadhav Vinayak Sanjay	7597		17
58	Jevrani Simran Anil	7598		8
59	Suhana T Shaikh			
60.	Mansi Sunil Gurav	7504		08

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Vivekanand College, Kolhapur (Autonomous)

Department of Microbiology

B.Sc. I Sem I Internal Exam

Sr. No.	Name of students	Roll No.	Paper I	Paper II
1	Gulabani Bhakti Amar	7503		

Mr. S. D. Gabale

VIVEKANAND COLLEGE ESTD. JUNE 1964

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SUPPLIMENT

Signature of Supervisor

Suppliment No. : –

Roll No. : 7540

Class : Bsc I

20/20

Subject : Microbiology paper IV

Test / Tutorial No. : Internal exam 2022-23

Div. : Date : 20/04/2023.

Q1. d] Aluminium

1. d] Ammonium sulfate.

2. b] E.coli.

3. d] Anaerobic chamber.

4. a] Sub-culturing.

5. a] peptide. 05

Q2. long answers :

2. Pure culture :- To study and examine a pure bacteria their character and morphology one require the pure culture.

The isolation of desired micro-organism from group of mixed flora is called as isolation from pure culture.

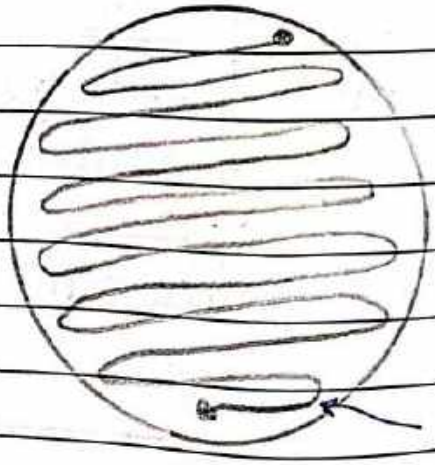
following are the different pure culture techniques :-

① Streaking : (Streak plate technique)
Streaking a loopful organism on agar plate is called as streak plate technique.
It has further different techniques :-

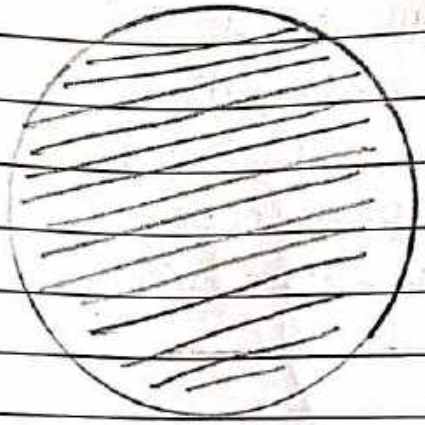
(a) Four Quadrant Streaking : In this a loopfull organism is streak in four quadrant manner on agar plate in aseptic condition.

Due to this type of streaking at the the last quadrant that is at IV th quadrant well isolated colonies are found.

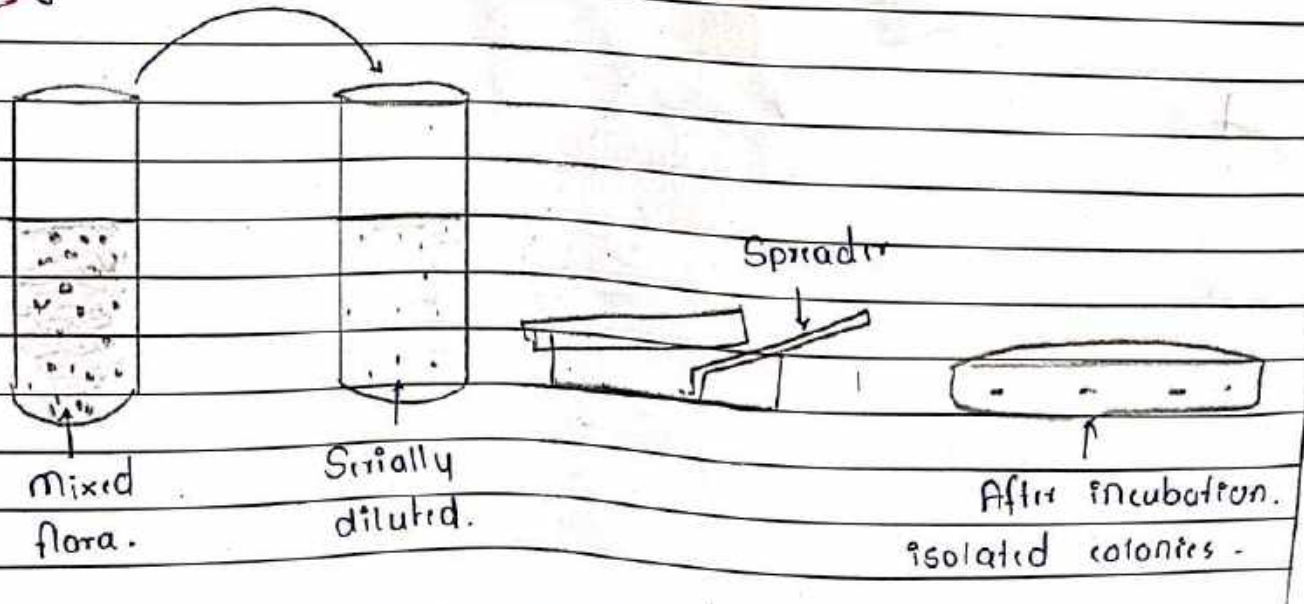
(b) Back and fourth streaking :
In this streaking continous back and fouth streak is done from one loopful organism. Due to which at the end we get well isolated colonies.



© Parallel streaking.
In this method parallel streaking is done due which we get non-nucleated colonies.



② Spread plate technique :- In this technique firstly serial dilution is carried out due to which last tubes contains only few number of organisms. Now, from that few tubes a loopful suspension is inoculated on the agar plate and then immediatly and evenly spread that drop in aseptic condition through sterile bind glass rod is that is called as spreader. And after sufficient incubation isolated colonies are observed on the surface of agar.



Because of this technique one can get isolated colonies.
Thus, pure culture is formed.

③ Pour plate technique :- In this technique serial dilution (10 fold serial dilution) is done and from each tube one loopful organism is inoculated and pour on agar.
This is called as pour plate technique.

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Suppliment No. : 1

Roll No. : 7540

Class : BSc-I

Subject : Microbiology paper IV.

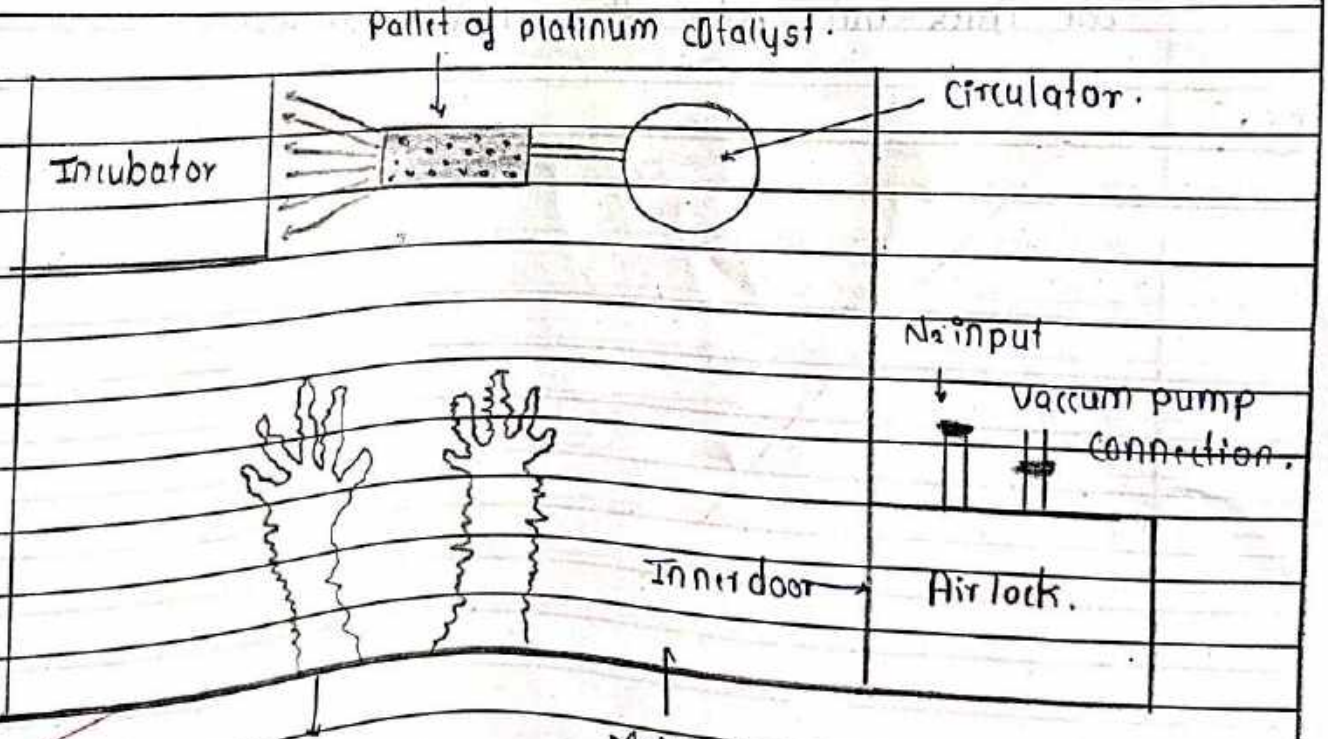
Test / Tutorial No. : Internal exam 2022-23

Div. : Date : 20/Jul 2023.

Q3. Short note :-

1] Anaerobic chamber :-

Anaerobic chamber is a Anaerobic box with rubber glouves at the front.



In this there is a main chamber to which the gloves are attached. Gloves are for the operator's hand to operate. The atmosphere inside the chamber is maintained by 5% CO_2, 10% H_2 and 85% nitrogen.
This chamber is attached to the other small chamber. The replacement and placement of plates, tubes and other media component are first kept in Air lock chamber and after incorporation of oxygen with other gas is done. Then it open the main chamber from inside.
In this way anaerobic condition is maintained.
There is a catalyst placed inside the chamber and forms water molecules. Using Hydrogen and Oxygen.

$$O_2 + 2H_2O \longrightarrow 2H_2O$$

Due to presence of rubber gloves the atmospheric air does not enter the main chamber.

05

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Suppliment No. :

Roll No. : 7496

Class : BSC-I

19/20

Subject : Microbiology - Paper IV

Test / Tutorial No. : Internal exam.

Dtr.: Date - 20-4-2023.

Q.1)

1) c) Alluminium sulfate

2) b) E. coli

3) a) Brewer's anaerobic jar

4) ~~d) freeze drying~~ a) Sub-culturing.

5) a) peptide.

04

Q:-2) Pure culture techniques.

2) • The growth of microorganisms in nutrient agar media called as culture
• The culture contain a single type of colonie of microbes is called as a pure culture
• The sepration of mitrobial colonies in mixed culture and obtaing single type of organism called as Isolation technique of pure culture.

• The various techniques are performed to a obtained pure culture.

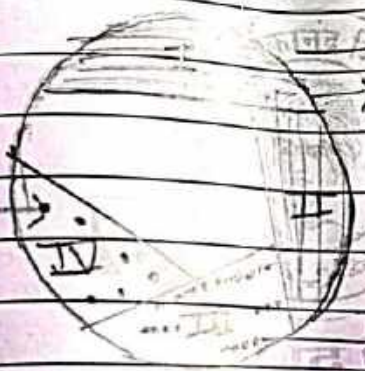
1) Streak plate method.

→ 1) Take a wire loop and sterillized by heating on a burner by flame.
2) Then cooled 5 sec. and dipped into a mixted culture. saline.
3) Take a loopful suspension of mixed culture and Streak on Nutrient agar medium. in aseptic condit
4) Incubate the plate
5) After suficient Incubation colonies are observed
6) The lines of streaking dilutes the organism and terminal line gives the Isolated colonies

2) four quadrant streaking method.

1) Take a wire loop and sterilized by heating flam of burner
2) Then cooled 5 sec. and dipped into a mixed culture Saline.
3) A loopful of mixed culture is straked on first quadrant of Nutrient agar medium with parallel and unidirection streaking

4) ~~similar to first~~
4) Then nicromwire loop sterillized by heating flame of burner.
5) Then cooled 5 sec. and similar to first quadrant 2nd squadrant also streak with end of first quadrant.
6) The succesive streaking as follows to 3rd and 4th quadrant.
7) streaking lines are diluted number of micro-orga
8) 4th quadrant gives the Isolated colonies.



four quadrant streaking

3) continious streaking method.
1) Take a sterile nicromwire loop.
2) Dipped into the mixed culture
3) A loopful of mixed culture streak continiously on a neutrient agar medium
4) continious streaking line after 0.5 cm
5) The Initial growth of microorganism is more and turminal end Dilute the microorganism

continious streaking

4) Parallel non-overlaping Streaking

→ 1) Take a stirile nicromwire loop.
2) Dipped in a mixed culture
3) A loopful suspension of mixed culture stre
on nutrient agar medium by parallel and
non-overlaping manner.
4) The lines dilute the number of microorgan
5) Terminal lines gives the Isolated colonies

Porollel non-overlaping Streaking

- Advantage of Streak plate technique.

1) It is ~~fermon~~ Perform less time
2) It has have less equipments are needed
2) It is not expensive method.

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Suppliment No. : 1

Roll No. : 7496

Class : BSC-I

Subject : Microbiology Paper-4

Test / Tutorial No. :

Div. :

5) Spread plate technique.

→ 1) It is another type of technique to obtained pure culture from mixed culture.

2) In this technique mixed culture is serially diluted by a sterilly distille water.

3) Serially dilution gives Numeber of diluted organism.

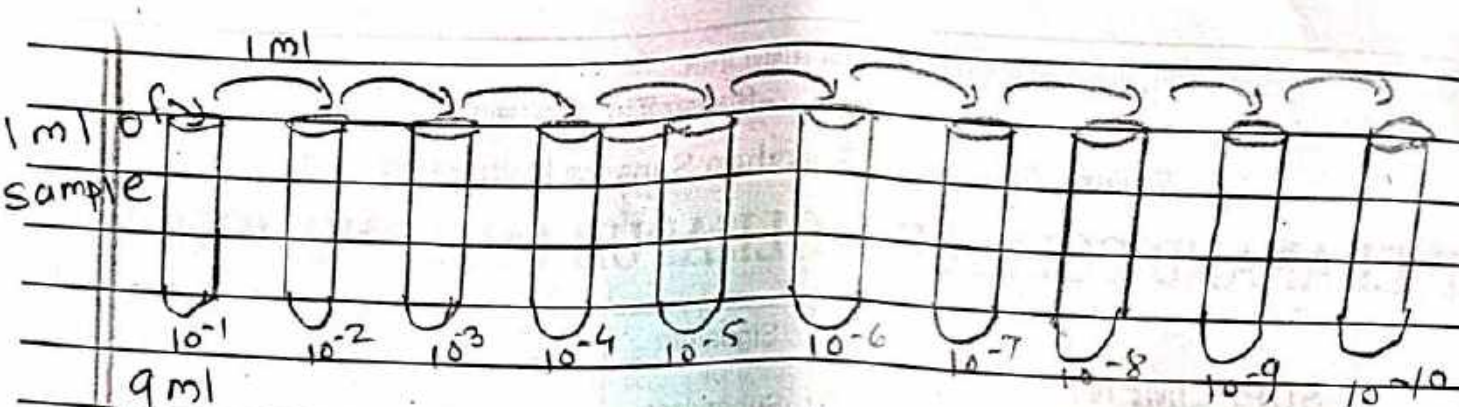
4) After serially dilution last few tubes contain less amount of microrganisms

5) last few tubes of sample 0.1 ml are inoculated on Nutrient agar by aspetically

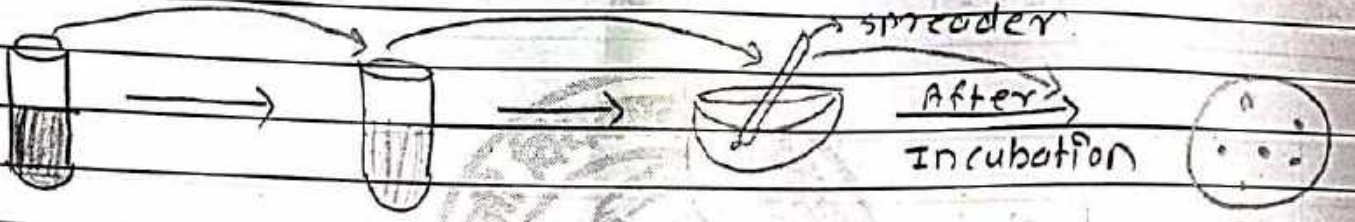
6) Then spread this sample evenly and quickly by the spreader.

7) After spreading plates are incubated at 35°C or sufficient incubation.

8) After incubation Isolated colonies are formed on a nutrient agar.



Serial dilution



6) Pour plate method.

→ 1) Pour plate method is some what similar to the spread plate method.

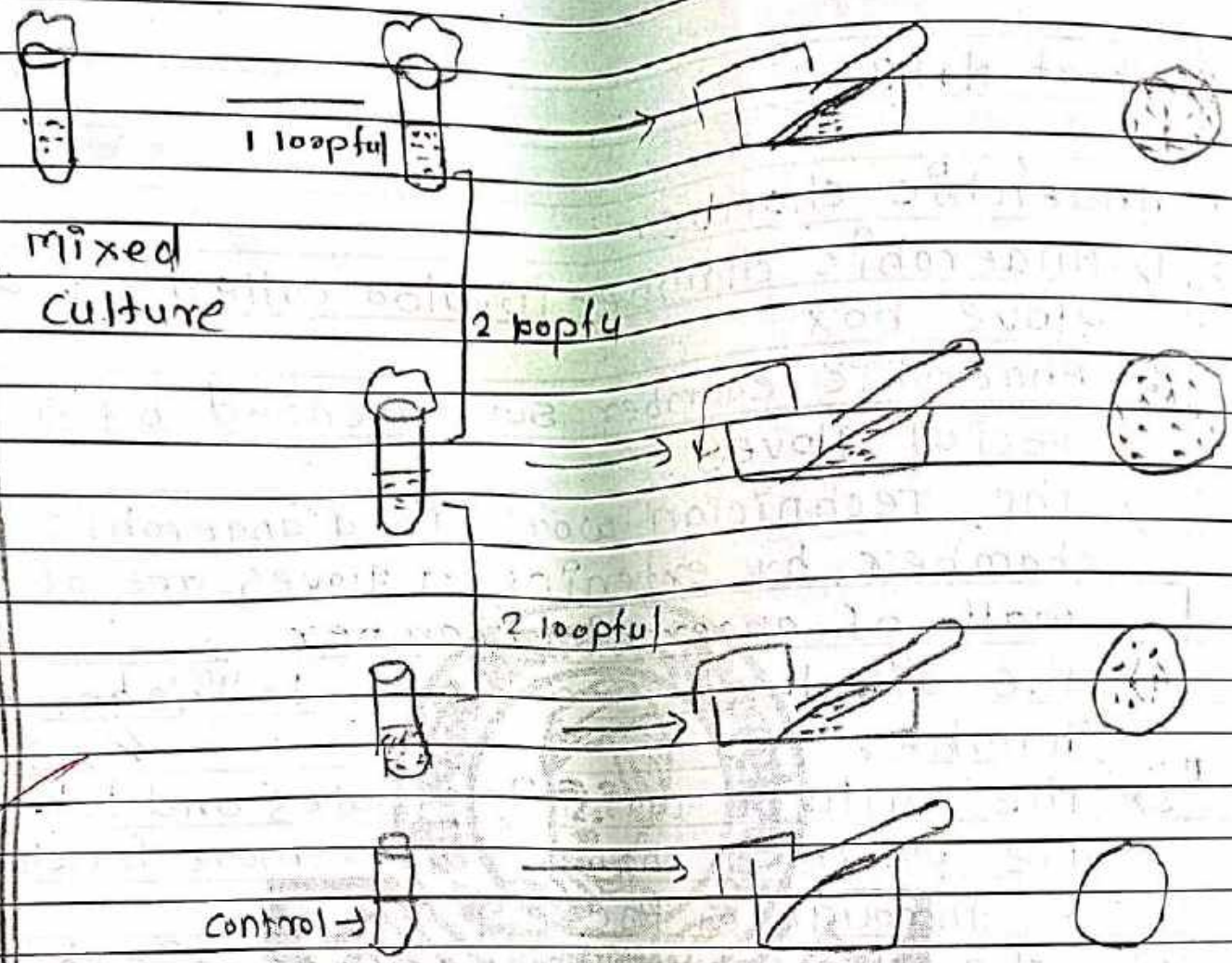
2) A mixed culture is serially diluted with the sterile distilled water.

3) The last few tubes contain small amount of microorganism

4) In last few tube 0.1 sample inoculated in a flask or large tube (temp 45°) in Aseptic condition

5) The flask are incubated

6) After incubation colonies are formed beneath the media



- It is expensive method have more apparatus
- It is not suitable for Isolation of psycrophile

7) Micro manuplator

1) It is instrument allowed to pick a single cell
2) It is conjugation with a microscope.
3) It have experience oprater.
4) single cell are placed in a cover slip by the helping micromanipulator.
5) It is very expensive method.

Q:3) Short Note

1) Anaerobic chamber

→ 1) Anaerobic chamber is also called as a glove box

2) Anaerobic chamber supplimented by a special gloves.

3) The Technician work in a anaerobic chamber by extening a gloves are of wall of anaerobic chamber.

4) The air loack is attacher to the anaerobic chamber

5) The culture containing plates and tubes are placed in chamber or remove by chamber is through by the air lock

6) The atmosphere in the Anaerobic chamber replaced by 10% hydroge, 5% calcium dioxide and 85% Nitrogen.

7) The paladium catalase are present in the Anaerobic chamber.

8) The air lock is opend inside and the plates and tubes placed.

9) The Hydrogen is reacts with the residual oxygen and forms water

10) Therofor the anerobic condition is maintained.

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Class :

Subject : Microbiology paper - 4

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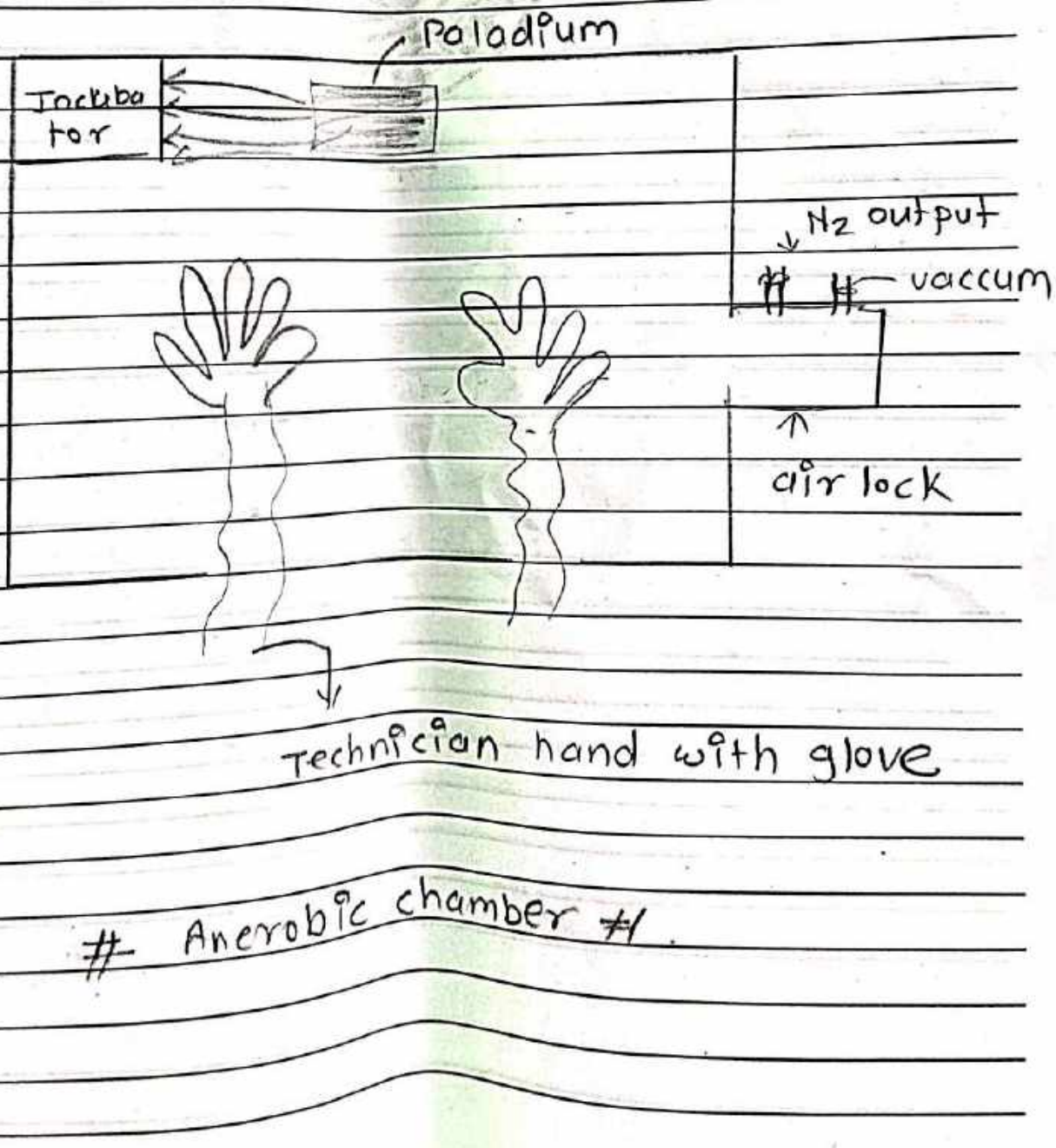

Anerobic chamber

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SUPPLIMENT

Signature of Supervisor: 19/20

Suppliment No. :

Roll No. : 7496

Class : BSC-I

Subject : microbiology - Paper III

Test / Tutorial No. : - Internal exam - 22-23

Div. : Date - 20-4-2023

Q:- 1)

1) Hydrogen.

2) methionine is the sulphar containg amino acid.

3) comlex

4) c) sodium taurocholate

5) a) Acetoin

6)

Q:2)

1) secondary structure of protein

→ 1) The secondary structure of protein is Result due to the folding of the polypeptide chain

2) The hydrogen bonds are involved in maintained the local structure

3) The Helix α and β pleated sheet are the most common secondary structures found in Protein and hence called as a regular structures

4) The α helix and β pleated sheet were first discovered by the Linus Pauling in 1951

- α helix →

1) It is a rod-like structure where amino acids are arranged in a helical fashion in clock wise direction ir right handed.

2) It is stabilized by formation of hydrogen bond between carbony oxygen of the amino acid and amide nitrogen of the fourth amino acid. away (n → n + 4th amino acid)

3) The hydrogen bonds are parallel to the axis of the helix

4) Each turn of the helix consists of 3.6 amino acids

5) Each turn 0.54 nm.

6) On an avarage, the typical α helix consist of 12 amino acids residues, measurin 18 nm in length of hydrogen bond.

- Features

→ 1) All helices found in proteins are right handed
2) Either L or D amino acids can form ~~right~~ a helix. The L and D amino acids can't form a helix.
3) The L-amino acids can form a α helix to the clockwise direction right side.
4) The α helix made up from the D-amino acid is ~~left~~ left handed.
5) Each turn of α helix consist of the 0.54 nm. and 3.6 amino acids.

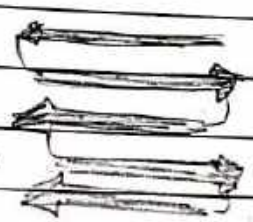
- occurrence -

1) It is found in globular protein as well as structural proteins like α keratin.
2) The α-keratin found in the hairs, nails claws and an outer layer of skin
3) The content of α-helix in proteins ranges from 0 to 100 %.

- The β Pleated Sheet

1) It is formed when two ore more segment of polypeptides chain lie close together
2) as a segment in a group form a pleated sheet called β pleated.
3) The segments are short consisting of 5 to 8 amino acid residues known a β-strand
4) Every strand is fully extended.
5) The distance between the two amino acid in the strand is 35 nm.

6) The β pleated sheet is stabilized by side
appears a pleated sheet, formation o
hydrogen bond between polypeptide bac
N-H and C=O of Polypeptide strands
7) Side chain of neibrouging amino acids lie
the opposite direction.
8) The antiparallel β-Pleated sheet is four
in a silk



β-Peated sheet

α-helix

10

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29077
Shri Swami Vivekanand Shikshan Sanstha Kolhapur's
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SUPPLIMENT

Signature of Supervisor

Suppliment No. : 1
Roll No. : 7496
Class : BSC-I

Subject : Microbiology. - Paper III
Test / Tutorial No. :
Div. :

Q:-3) Short Note

1) Macro element.

1) Which elements require in large quantities called as a macroelement.
2) The macroelement consist of ten like hydrogen, oxygen, Potassium, phospher, calcium, magnecium, Nitrogen, iron and sulphar.
3) The first six macroelement like hydrogen, oxygen, sulphar, phosphers are the neet for the formation of lipid, fat, acids etc.
4) other macroelement rolls ar given below.

1) K^+ (Potassiu) - ① It is present in active site of protein synthesis
② It is play role in cation of cell.

2) Ca^{++} (calcium) - ① It is catalyse of protalase and amylase
② It is heat resistance of the endospore of the cell.

3) Fe^{++} / Fe^{+++}

→ 1) It is a part of cytochrome
2) Also It is co-factor for catalyse
3) chealiting agent for nitrogenease enzymes

4) Mg^{+++}

1) It is co-factor for many enzymes forms complex with ATP.
2) Stabilize ribosome and cell membrane

2) Microelements :→

→ • In addition to macro elements the cell needs the several elements in small percentage that called the microelements
• Microelements consist of zinc, cobalt, Nickel copper. and molybdenum, mengenese.
• Microelements are normally a part of enzyme and co-factor and thus aid in catalyze of reaction.

1) • zinc :→

1) present in active site of some enzyme like DNA and RNA polymerase
2) Involved in regulatory function.

2) • mangenase :-

1) cofactor for PEP carboxylase
2) cofactor for enzyme transfering phosphate group.

copper :-

1) present in cytochrome oxidase and oxygenase

Nickel -

1) present in ureas

2) Required for autotrophic Hydrogeneous

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Vivekanand College, Kolhapur (Autonomous)

Department of Microbiology

B.Sc. I Internal Exam

Date: 20/04/2023

Sr. No.	Name of students	Roll No.	Paper III	Paper IV	Total out of 30
1	Abrange Vaishnavi Vinod	7490	08	08	12
2	Aivale Pooja Birdeve	7491	08	08	12
3	Amane Shantanu Krishnat	7492	05	10	12
4	Bune Mansi Krishnat	7494	Absent	Absent	Absent
5	Chougale Sanika Vishnu	7496	19	19	29
6	Dindayal Prabodhini Raju	7498	08	8	12
7	Dinde Ankita Rangrao	7499	18	16	25
8	Gaikwad Divya Sanjay	7500	16	13	22
9	Gaikwad Nikita Nandkumar	7501	18	18	27
10	Gulabani Bhakti Amar	7503	10	18	21
11	Hajare Aishwarya Ganesh	7505	04	09	10
12	Jadhav Karan Dipak	7506	05	10	12
13	Jadhav Shruti Shivraj	7507	Absent	Absent	Absent
14	Jasud Rutuja Tanaji	7508	18	13	24
15	Kachare Ishwari Pradeep	7509	17	16	25
16	Kamat Sanskruti Santosh	7510	05	10	12
17	Khanvilkar Anjali Hemant	7513	08	12	15
18	Kharade Pratiksha Sharad	7514	Absent	Absent	Absent
19	Kharade Sanchit Sachin	7515	17	13	23
20	Khot Vaishnavi Jitendra	7516	11	18	22
21	Koli Vedanti Vijay	7517	Absent	Absent	Absent
22	Korane Harshad Mahesh	7518	03	16	15
23	Kulkarni Sai Vivek	7519	10	15	19
24	Ligade Smeet Sunil	7520	08	12	15
25	Mane Rohan Baban	7521	11	12	18
26	Mujawar Aabida Altaf	7523	11	16	21
27	Murti Vanshita Sanjay	7526	08	16	18
28	Parulekar Diksha Devdatta	7528	13	17	23
29	Patil Avantika Arun	7529	10	10	15
30	Patil Sakshi Satappa	7530	Absent	Absent	Absent
31	Patil Samruddhi Sanjay	7531	13	14	21
32	Patil Sharwari Yuvraj	7532	13	12	19
33	Patil Suhani Sadashiv	7534	12	17	22
34	Patil Tejas Tukaram	7535	01	03	3
35	Powar Diya Kiran	7537	11	12	18
36	Prabhu Savali Shivaji	7538	10	10	15
37	Sanadi Firdos Shakil	7539	15	14	22

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38	Shaikh Mushfira Balu	7540	11	20	24
39	Shelke Yogesh Balu	7541	08	08	12
40	Shewale Prithviraj Subhash	7542	12	16	21
41	Todkar Nirjara Shivaji	7544	03	09	9
42	Vaze Sai Abhijit	7545	08	14	17
43	Wadkar Samrudhi Dhanaji	7546	15	16	24
44	Yadav Sushant Harishchandra	7547	17	15	24
45	Yatam Ashutosh Bhagvan	7548	08	12	15
46	Hardikar Yogi Ashutosh	7549	16	18	26
47	Athale Arjun Asit	7559	16	15	24
48	Sonule Sushant Krishnat	7568	18	17	25
49	Bhosle Vedika Sudhir	7573	14	15	22
50	Patil Gaytri Tanaji	7575	Absent	Absent	
51	Mali Prachi Sanjay	7576	10	16	20
52	Shaikh Rizwan firoj	7445	17	19	27
53	Sutar Sakshi Chndrakant		Absent	Absent	
54	Majgavkar Sanika Sagar	7525	09	12	16
55	Shaikh Suhana Tipusultan	7447	Absent	Absent	
56	Patil Kartigraj Bhagwan	7533	15	15	23
57	Jadhav Vinayak Sanjay	7597	17	17	26
58	Jevrani Simran Anil	7598	08	07	12
59	Suhana T Shaikh		Absent	Absent	
60	Gurav Mansi Sunil	7504	08	14	17

Mr. S.D. Gabale -

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Vivekanand College (Autonomous), Kolhapur

Department of Microbiology

Notice of Internal Exam

B.Sc II,Sem IV

Date:5/4/2023

All the students of B.Sc. II Microbiology are hereby informed that, the **"Semester-IV internal exam"** is scheduled on **Tuesday, 18th April , 2023 at 10.00 p.m** in class room no.64.Please make it convenient to be present on time. Topic are as follow –

Sr.No.	Title of Paper	Topic
1	**Paper VII : Microbial Genetics & Molecular Biology**	**All syllabus covered till 5 April 2023**
2	**Paper VIII : Basics in Medical Microbiology & Immunology**	**All syllabus covered till 5 April 2023**

Question Paper Format : (Same format for both papers)

Q.1 Select the correct alternative from the following. 5 marks

Q. 2 Long question (Any 1) 10 marks

Q.3 Write a short notes on (Any 1) 5 marks

Total- 20 marks

ESTD JUNE 1964

Incharge Head
Department Of Microbiology
Vivekanand College, Kolhapur
(Autonomous)

Vivekanand College, Kolhapur [Autonomous]
Department of Microbiology
B. Sc. II
Internal Exam
Paper VIII –Basics in medical microbiology & immunology

Date: 20 April 2023

Marks: 40

Time: 9.30pm to 11.30pm

Q.1.Choose the correct alternative and rewrite the sentence. **5**

1.Infection that is restricted to a particular region of body is called .....infection
a.simple b.local c.overt d.mixed

2. The organism which is normally harmless but may cause infection when gets an opportunity is called ..... pathogen
a. opportunistic b. true c.psuedo d.All of above

3. ..... is an example of pandemic disease.
a.ebola b.common cold c.covid d.cholera

4. The resistance developed by an individual's own body in response to an antigen stimulus is called .....immunity
a.active b.passive c.artificial passive d.natural passive

5..... is produced in response to viruses.
a.lysozyme b .interferon c.bacteriocin d.fibronectine

Q.2 Long answer question. **10**

1.Explain in detail exotoxin & endotoxin w.r.t their properties,structure & effects.

2. Explain in detail passive immunity.

Q.3 Short note. **5**

1.Types of disease.

2.Role of fever in defense mechanism.

Vivekanand College, Kolhapur [Autonomous]
Department of Microbiology
B. Sc. II
Internal Exam
Paper VII -Microbial genetics & molecular biology

Date: 20 April 2023 Marks: 40

Time: 9.30pm to 11.30pm

Q.1.Choose the correct alternative and rewrite the sentence. **5**

1.The maleness of bacteria is due to the presence of ..... plasmid
a.R b.F c.Col d. cryptic

2. The seduction is a type of conjugation that occurs between .....
a. Hfr b. F^+ & F^- c.F^1&F^- d.None of these

3. The split gene start & end with .....
a.intron b.exon c.recon d. cistron

4. ..... is a initiation codon.
a.AUG b.UAG c.UAA d.UGA

5. A mutation that causes changes in two or more different phenotype properties is called as..... mutation.
a.Pleiotropic b.silent c.nonsense d.missense

Q.2 Long answer question. **10**

1.Explain in detail various properties of genetic code.

2. Define transformation.Explain in detail mechanism of transformation.

Q.3 Short note. **5**

1.Split gene

2.Discovery of conjugation.

Vivekanand College, Kolhapur [Autonomous]

Department of Microbiology

B. Sc. II Internal Exam

Paper VII & Paper VIII

Date: 20 April 2023 Marks: 40

Time: 9.30pm to 11.30pm

VII

Sr.No	Roll no.	StudentName	Paper VII	Paper VIII
1	7927	Angaj Aishwarya Maruti		
2	7928	Balekundri Dhanashri Raju		
3	7929	Bhosale Sharayu Pradeep		
4	7931	Chavan Sanika Sagar		
5	7934	Gawari Sapana Shivaram		
6	7935	Gurav Atharva Ramdas		
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15	7944	Kashid Snehal Babaso		
16	7945	Kesarkar Prachi Chandrakant		
17	7946	Khairmode Swarupa Prasad		
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20	7949	Lole Shriya Prakash		
21	7950	Madhale Ashlesha Shivaling		
22	7951	Rahul Gautam Malavi		
23	7952	Mulik Mohini Shivaji		
24	7953	Mulla Sanovar Salim		
25	7955	Pardeshi Shrutika Manik		
26	7956	Parkar Siddhi Anil		
27	7957	Arpita Shivaji Patil	Present	Present
28	7958	Pooja Amar Patil		
29	7960	Patil Samruddhi Sudhir		
30	7961	Sanika Sanjay Patil		
31	7962	Patil Smita Lakshman		
32	7963	Pawar Galaxy Sunil		
33	7965	Potdar Shefali Satish		
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36	7968	Sankpal Sourabh Rajaram		
37	7969	Sawant Rohan Ravindra		
38	7970	Surgali Shreeshail Mallappa		
39	7971	Sutar Kedar Santosh		

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40	7972	Thorbole Sanika Prakash		
41	7973	Vadgaonkar Prasad Subhash		
42	7974	Pranali Shivaji Vharamble		
43	7988	Patil Sanika Shital		
44	7930	Chandala Vaishnavi Vivek		
45		~~Chougale Trupti Tukaram~~		
46	7964	Pisal Vaishanvi Ramesh		
47	7954	Padaval Damini Mohan		
48	7933	Pravarta Abhijit Dabholkar		

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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor: 18/20

Suppliment No. : 1

Roll No. : 7938

Class : B.Sc. II

Subject : Microbiology Paper VIII

Test / Tutorial No. : Internal exam 2022-23

Div. : Date :- 20/04/2023

Q.1]

1] b] Local

2] a] Opportunistic

3] c] Covid.

4] a] Active

5] b] Interferon.

5

Q.2]

2] Explain in detail passive immunity.

→ - Immunity is a resistance or insusceptibili exhibited by host to toxic substances, microorganisms and foreign cells
- Passive immunity is an immunity acquired by an individual by receiving antibodies or sensitized white blood cells from an immune donor.
- Passive immunity differs from active immunity in following ways:
- There is no antigen stimulus. So, there is no participation of recipient's immune system
- There is no production of antibodies but they are transferred from immune donor to non-immune individual
- There is no latent period
- An individual gets immediate immunity after passive immunization & the immunity lasts for few days.
- There is no memory cell formation
- Passive immunity is less effective or inferior than active immunity.
- The main advantage of passive immunity is that the immunity is provided when it is immediately needed
- There are two types of passive immunity :-
a] Natural passive immunity
b] Artificial passive immunity.

A] Natural Passive Immunity:-
- Natural passive immunity is a transfer of immunity from mother to unborn child [foetus].
- In human beings, natural passive immunity is acquired by transfer of antibodies [mainly IgG] from mother to foetus through placenta
- Human colostrum also provides natural passive immunity as it is rich in IgA antibodies
- Breastfeed babies can absorb these immunoglobulins directly from gastrointestinal tract.
- After five months of birth, baby produces its own antibodies but still he was protected against various infectious diseases because of antibodies received from his mother.

B] Artificial Passive Immunity :-
- The immunity that is transferred from immune donor to non-immune individual by receiving antibodies or immunized lymphocytes is known as artificial passive immunity
- It is used in therapeutical treatments such as Diphtheria, snakebite, immunodeficiency diseases, etc.
- Artificial passive immunity is brought about by using following types of sera:-
a] Hyperimmune serum of an animal or human origin
b] Convalescent serum
c] Pooled sera from healthy individuals

a] Hyperimmune serum of animal & human origin:
- In this method, active hyperimmunization of an animal [usually cow & horse] is done.
- Then serum is separated by bleeding the horse.
- Antibodies in serum are concentrated & purified by fractionalisation & enzyme treatment and then are used.

b] Convalescent serum:-
- The serum from a person recovering from a particular disease, has high amount of antibodies against specific antigen responsible for that particular disease.
- Such a serum is called convalescent serum.

c] Pooled sera from healthy individuals:-
- A large number of sera is collected from number of healthy individuals in a community & its fraction of antibodies is used against common infectious diseases.

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VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Suppliment No. : 2

Roll No. : 7938

Class : B.Sc II

Signature of Supervisor

Subject : Microbiology Paper VIII

Test / Tutorial No. : Internal exam 2022-23

Div. : Date : - 20/04/2023

).2]

1] Types of diseases :-

- An exposure to large numbers
- We constantly expose to large number of organisms
- When these organisms becomes aggressive, it will result into a condition - "disease."
- Based on occurence & number of individuals affected the diseases are broadly classified as :-

a) Epidemic
b) Endemic
c) Pandemic
d) Sporadic

A) Epidemic -

- It is a sudden increase in occurrence of disease
- A large number of population may get affected if the pathogen is viral

- The epidemic is of two types:
a) common source epidemic :- Here, the persons get infected simultaneously eg. ~~Cholera~~ Spread of cholera through contaminated water.
b) Person to person epidemic :- This epidemic is caused due to chain transmission. The infection is spread through one individual to other & so on

B] Endemic :-
- Endemic is a disease that occurs at low frequency & at regular intervals
- Endemic is constantly present in a particular area but with low frequency. eg. common cold.
- It is restricted to a particular area.
- When the frequency of endemic increases, it is known as hyperendemic. Eg. common cold in winter

C] Pandemic :-
- It is a spread of disease in large population throughout the world & most of the parts.
- It is spreaded within short period & affects many individuals
- Usually, these are airborne disease
- Eg. COVID-19 caused by corona virus.

D] Sporadic :-
- It has very few cases, because the virulence of an organism gets decreased & resistant

against it is increased by population
- Sporadic diseases occurs after epidemic
- Sporadic diseases occurs occassionaly and at regular intervals

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VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Suppliment No. : Slide 19/20

Roll No. : 7938

Class : B.Sc. II

Signature of Supervisor

Subject : Microbiology Paper VII

Test / Tutorial No. : Internal exam 2022-23

~~Div.~~ Date :- 20/04/2023

.1]

1] The maleness of bacteria is due to the presence of F plasmid

2] c] F' & F⁻

3] The split genes starts & end with exon

4] a] AUG.

5] a] Pleiotropic.

OS

Explain in detail various properties

Q. Define transformation & explain in detail mechanism of transformation

⇒ - Transformation is a mode of gene exchange in bacteria.
- Transformation is a process of transfer of free DNA from environment to reciepient bacterial cell.
- The free DNA may be circular or linear & can be transposons, plasmids, integrons or fragments of DNA.
- Mechanism of transformation involves following stages :-
a] Developement of competence
b] Binding of DNA to cell surface
c] Uptake & processing of DNA
d] Integration of DNA into chromosome by recombination

A] Development of competence :-
- Competence is the ability of bacterial cell to take up the extracellular DNA.
- Number of Gram positive and Gram negative bacteria are naturally competent. It means that, they can easily take up the extracellular DNA.
- Organisms release their DNA in environment in their late stationary phase by the process of autolysis.
- Some bacteria such as E. coli are not naturally

competent.
- These type of cells can be made competent by using different laboratory techniques such as treatment with calcium chloride & by applying strong electric field

B] Binding of DNA to cell surface:-
- Uptake of fragments of DNA or plasmids is occurs only at the poles of cell.
- It is actual site where the competence factors are usually found.
- Therefore, binding of DNA occurs at the poles of cell. Eg. Haemophilus influenza takes DNA from Haemophilus species & rejects DNA from othere species

C] Uptake & Processing of DNA
[usually at 3' to 5']
- Uptake of DNA is an ATP dependent process
- It requires cell wall degradation proteins, single binding proteins & cell membrane transport proteins.
- In Gram positive organisms, for ex: S. pneumoni & Bacillus subtilis, out of two DNA strands, only single strand enters inside the cell.
- Single stranded DNA entering inside the recepient cell is bounded by SSDNA binding proteins to protect it from digestion by nucleases.

D] Integration of DNA into chromosome by recombination.

- The transformed DNA gets integrated into host's chromosome.
- This process of integration occurs through mechanism of recombination.
- Here, the homologous DNA fragment is replaced by transformed DNA fragment.
- In case of plasmids, if they are transferred from donor cell or from environment to recepient cell & have ability of self-replication, they will ~~trans~~ replicate & will ~~trans~~ distributed in next generations.

09

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Shri Swami Vivekanand Shikshan Sanstha Kolhapur's

VIVEKANAND COLLEGE, KOLHAPUR (AUTONOMOUS)

SUPPLIMENT

Signature of Supervisor

Suppliment No. :

Roll No. : 7938

Class : B.Sc.II.

Subject : Microbiology paper VII

Test / Tutorial No. : Internal exam 2022-23

Div. :

Q.3]

2] Discovery of conjugation.

- Conjugation is a process of genetic material exchange between two live bacterial cell through direct cell to cell contact.
- The genetic material may be plasmid or a portion of chromosome along with plasmid
- The process of conjugation was discovered by Joshua lederberg & Edward Tatum in 1946.
- They selected two strains - Strain A & strain B of Escherichia Coli K12. The strains have different nutritional requirements as they are auxotrophic mutants.
- Strain A is designated as $Met^+ Bio^- thr^+ leu^+$. It means it is unable to synthesize methionine & biotin and these growth factors must be present in minimal medium in order to grow.
- Strain B is designated as $Met^+ Bio^+ Thr^- Leu^-$. It means it is unable to synthesize threonine & leucine and these growth factors must be

present in minimal medium in order to grow.
- They mixed both these strains & incubated on complete medium.
- When the small portion of this mixture was ~~grown on~~ incubated on minimal medium, prototrophs are developed as $Met^+ Bio^+ Thr^+ Leu^+$
- The frequency of prototrophs was much less, i.e 1 cell in 10,000,000.
- This indicates that recombination between two strains had been takes place.
- But these results, were not sufficient to prove that physical contact between two cells is necessary
- To prove this, B. Davis conducted an experiment by using U-tube.
- He used U-tube separated by sintered-glass filter.
- The two strains were grown in separated arms.
- The U-tube allows the flow of medium but not the passage of cells
- As a result, there were no prototrophs developed inside the tube
- This indicates that, for exchange of genetic material, physical contact between two cells is necessary

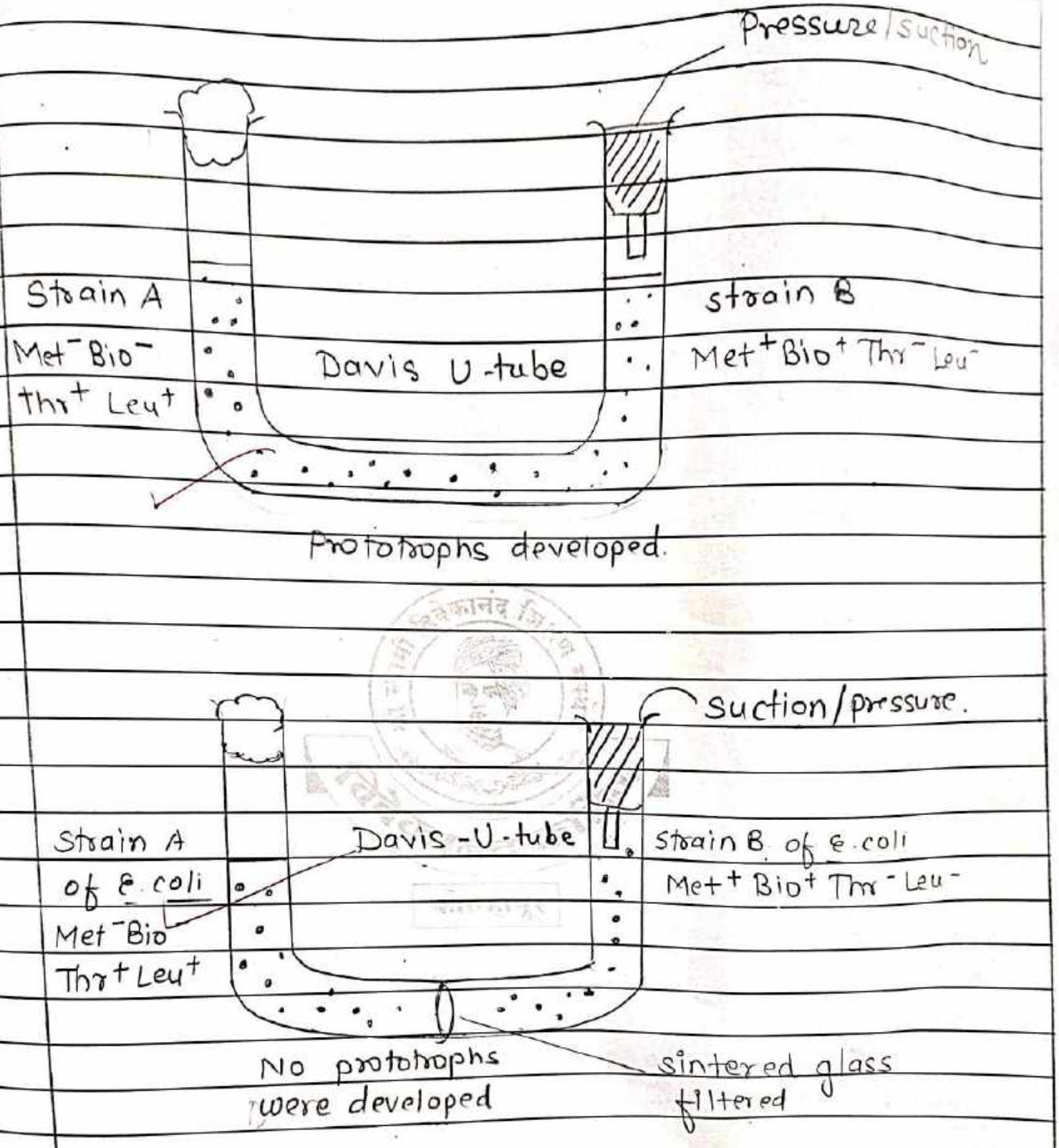

Fig. Davis U-tube experiment

05

Vivekanand College, Kolhapur [Autonomous]

Department of Microbiology

B. Sc. II Internal Exam

Paper VII & Paper VIII

Date: 20 April 2023 **Marks: 30**

Sr.No	Roll no.	StudentName	Paper VII	Paper VIII	Total
1	7927	Angaj Aishwarya Maruti	12	13	19
2	7928	Balekundri Dhanashri Raju	12	12	18
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27	7954	Padaval Damini Mohan	16	19	27
28	7955	Pardeshi Shrutika Manik	15	19	26
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36	7964	Pisal Vaishanvi Ramesh	10	08	14
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38	7966	Powar Rushita Dinkar	17	17	26
39	7967	Sahani Ankita Chotelal	14	19	25
40	7968	Sankpal Sourabh Rajaram	10	15	19
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43	7971	Sutar Kedar Santosh	13	17	23
44	7972	Thorbole Sanika Prakash	15	20	27
45	7973	Vadgaonkar Prasad Subhash	10	13	18
46	7974	Pranali Shivaji Vharamble	14	13	21
47	7988	Patil Sanika Shital	13	15	21

Ms. S.A.Pise –

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