"Education for Knowledge , Science and Culture".
Shikshanmaharshi Dr. Bapuji Salunkhe
Shri Swami Vivekanand Shikshan Sanstha's
Vivekanand College Kolhapur.(Empowered Autonomous)
Department of Biotechnology

Date 08/10/2023

Notice

All students from B.Sc,I II,III Biotechnology (Optional) there will be a Internal Exam On 18/10/2023 at Biochemistry and Microbiology Lab at 2:30 pm. An attendance is compulsory for all as it is a part of Academics. So kindly be present on time.

VIVEKANAND COLLEGE ESTD. JUNE 1964 KOLHAPUR-416 003

Head of Department

HEAD
DEPARTMENT OF BIOTECHNOLOGY (OPTION)
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

VIVEKANAND COLLEGE, KOLHAPUR .

EMPOWERED AUTONOMOUS

B.Sc. I Optional Biotechnology
Internal examination 23-24
Paper I& II
Marks-20

Q. 1 Choose the correct alternative

1. Sucrose is an example of non reducing---------- .

a. Disaccharide b. Monosaccharide c. Polysaccharide d. Oligosaccharide

2. The branched chain of starch is called ---------- .

a. Amylose b. amylo pectin c. amylase d. beta amylase

3. ---------- is the smallest amino acid in protein.

a. Proline b. Glycine c. aspartic acid d. glutamine

4. A disulfide bond is a covalent bond in ---------- structural level.

a. Primary b. Secondary c. Tertiary d. Quaternary

5. Myglobin contain ---------- amino acid.

a. 120 b. 153 c. 141 d. 252

6. ---------- is anticoagulant.

a. Chitin b. Pectin c. Heparin d.Hyaluronic acid

7. Lactose is an example of ---------- sugar.

a. Milk b. Corn starch c. Honey d. Cellulose

8. Hemoglobin is made up of ---------- polypeptide chain.

a. 8 b. 6 c. 4 d. 7

9. Glycogen is storage polysaccharide in ----------.

a. Plant b. Animal c. Fungi d. Algae

10. This type of Diabetes Mellitus transfer from mother to baby.

a. Type-1 b. Type-2 c. gestational d. younset

11. Electromagnetic spectrum contains --------- fields.

a. 2 b. 4 c. 9 d. 5

12. Visible region is ---------- nm.

a. 200-400 b. 400-700 c. 700-900 d. 1000

13. ---------- is a light dispersion device in colorimeter.

a. Cuvette b. Lenses c. Filter d. none of these

14. Colorimeter based on ---------- law.

a. Lambert's b. Bragg c. Watson d. Mulis

15. The light not absorbed by absorbing media is called ---------- light.

a. incident b. absorbed c. transmitted d. emitted

16. ..... is an example of disinfectant.

a. NaCl b.AgNO3 c.KOH d.HCl

17.Test tube with medium are sterilized by.....

a. Hot Air Oven b. Incubator c.Autoclave d.Biosafety Cabinet

18. ..... is used to balance osmotic pressure in the medium.

a. NaCl b. Distilled water c.Peptone d. Nutrient agar

19.Pasteurization is process of .....

a. Filtration b. Disinfection c. Purification d.Centrifugation

20. for disinfection of water ----------halogen is used.

a. Bromine b. Chlorine c.Iodine d. Flurine

DATE / /

Name :- kaman Suresh kamble
Class :- BSc - 1 (Biotechnology) opt
Roll No. :- 7543

General principles of Microscope

1] Magnification :-

Magnification is very important property of microscope. Magnification is the degree enlargement. It represents how much time the object or specimen is enlargement when it is seen under the lens The magnification of lens. The magnification of lens depends on its focal length. A lens with Smaller focal length has the ~~lower value~~ the higher magnification The focal length has the lower limits i.e: beyond certain lower value the focal length cannot be reduced if the focal length is further reduced beyond this lower limit it will cause defects in the lens and affects image formation.

The magnification power of the objective lens is predetermined during its construction and it is engraved on its body. The magnification power of the objective lens ranges from 1x to 100x, The 'x' is read as 'times' and in Combination with the number it represents how many times the image of the object is magnified. for example the objective 100x represents the object is magnified 100 times. The magnification power of most Commonly used objective is 5x, 10x, 20x, 40x, 45x, & 100x The short focal length of objectives makes them able

100x to magnify object better than a simple hand held magnifying lens. The magnification of objective can be calculated by using ocular and stage micrometer slide.

The magnification power of the ocular from 5x to 30x The ocular with magnification power 10x and 15x is most commonly used In microscopy. Total magnification of the microscopy Total magnification of the microscope can be calculated by multiplying the magnification power of the objective lens and ocular lens. for example; with 100x objective and 10x ocular The total magnification of microscope become 100x (100x 10 = 1000x).

Total magnification also depends on tube length of the microscope body tube. The objectives and ocular should be selected that matches with tube length the microscopic magnification falls under two types, useful magnification, and empty magnification, which magnifies the image of the object to that extent where details of the object can be seen or preserved (image with high resolution). on the other hand, The, The empty magnification is the magnification, where the image of the object is magnified but details get lost (image with low resolution)

2] Resolution and Resolving Power of microscope

Resolution is the ability of the lens to see the details in the object In other words, it means the ability to resolve or distinguish very close points on the specimen / object as a separate The resolution is expressed mathematically as Resolving power (RP) Greater details of the object can be seen through a lens having high resolving power. The resolving power of the lens is given by.

$$\text{Resolving power (RP)} = \frac{\lambda}{2NA}$$

where, λ = wavelength of radiation used for illumination.

NA = Numberical aperture of the lens

The resolving power is actually representing the minimum distance between the closely placed points so that they can appear as a separate at given wavelength of radiation and numerical aperture of the lens This minimum distance is also called as the limit of resolution the limit of resolution (d) was given by Ernst Abbe in 1870

$$d = \frac{0.5\lambda}{n \sin \theta}$$

where, 0.5 is the Constant related to human eye resolution

λ = wavelength of radiation used for illumination

$n \sin \theta$ = represent the NA (Numerical Aperture) The resolving power depend on

The wavelength (λ) of radiation (light or electron beam) used for illumination and numerical aperture of the lens (NA) The most common NA of oil immersion lens is 1.40 and the average wavelength of the visible light is 550 nm The resolving power of the oil immersion lens can be calculated as,

$$\text{Resolving power (RP)} = \frac{\lambda}{2Na}$$

$$= \frac{550}{2 \times 1.30}$$

$$= 200 \text{ nm or } 0.2 \mu m$$

This means, with 100x objectives two points separated by the minimum distance of 0.2 μm or more can appear as distance and separate.

So from the above equation greatest resolution can be obtained by using the radiation having the shortest wavelength (λ) and alens having high NA The shortest wavelenghth and high numerrical apeture decreases of limit of resolution (d) and increases the resolving power of the lens As we are limited by chalf the angular apeture of the cone of light enterinaire in creased beyond a certain value. so the only way to further increase the resolution power of the lens is to use short wavelength radition for illumination

TEJ MY BRAIN
DATE / /

Resolving Power of human eye :-

The human eye is also limited by resolving power the resolving power of the human eye is 0.2 mm This means if the human eye wants to see the two points as a separate from the distance of 25 cm, the points should be separate from the distance of 25cm The points should be separted by at least 0.2 mm or more If They are close than this resoluation limit, they appear as a single, blurred object. The resolving power also gives an idea about how small object can be seen The object having the size of 0.2 mm or greater appears distinct while the objects smaller than 0.2 mm appear as blurred.

8/10/23
Notice

Assignment Submission.
First Year - Biotech (opt.)

Student Name	Sign.
1) Bhakti Bhagavat Shinde.	Bhakti.
2) Sakshi Prakash Patil	Spatil
3] Ziya. M. Shafik Pendhari	Pendhari
4] Aryan Raju Birajdar.	Birajdar.
5] Atharv Ramesh Sangrale	ASangrale
6] Ankit Deepak Sawant	Asawant
7] Shreepad B. Jadhav	Shree Jadhav
8] Amrapali Y. Kamble	AYkamble
9] Snehal. A. Patil	Patil
10.] Riya. S. Hirave	RShirave
11] Swara. S. Charan	Schari.
12) Aditi K. Valave.	
13) Sanika Y. Patil.	Patil
14) Uzma. S. Beg	Beg.
15] Misba. A. Dafedar	MR

Goodl

(2) Selection of ... with appropriate ratio of Auxine & ... condition

Aaftab Umarfaruk Badekhan
karan Suresh kamble
Ritesh Kisan Sakate
Abhinandan Babaso Patil
HARSHVARDHAN A. MHAGVM
Amruta Subhash Rawool

SN.	First name	Last Name	14/09
1.	Ankita	Thombare	
2.	Priyanka	Shinde	
3.	Vedanshu	Chopadar	—
4.	Prachi	Awate	
5.	Pratiksha	Halunde	
6.	Sanika	Patil	
7.	Abhay	Shinde	
8.	Shraddha	Patil	—
9.	Pranav	Sandugade	—
10.	Janhavi	Salokhe	—
11.	Supriy	Sarpe	
12.	Aman	Kamble	
13.	Pradeep	Ganap	
14.	Mahima	Sarvagode	
15.	Jai	Koli	—
16.	Sandhyarani	Chendage	
17.	Abhijeet	Jadhav	—
18.	Aishwarya	Patil	—
19.	Yusaira	Pendhari	—
20.	Tasnim	Desai	
21.	Rutuja	Chougule	—
22.	Koustubh	Yedurkar	—

Name: Janhavi Vikrant Salokhe. Roll No: 8464
Sub: T.Y. (Biotech opt)

GoodLuck | Page No.
Date

Assignment No: 1

'Callus Culture'

"Callus tissue means unorganized proliferative mass of cells produced from isolated plant cells, tissue or organs."

In culture, The existed plant tissue looses it's structu-ral integrity and changes completely to rapidly proliferative unorganized mass of cells which is called an 'callus Tissue'.

Principle of Callus Culture:-

- Three important criteria in callus culture

(1) Aseptic preparation of plant material
(2) Selection of suitable nutrient medium supplemented with appropriate ratio of Auxine & cytokinines or only appropriate auxine.
(3) Incubation of culture under controlled physical condition of exsized plant part (Explant) washed with liquid deterg-ent 5% v/v Teepol. Heating them in water bath or auto-clave at low pressure.

Incubation of culture under controlled physical conditions:

- Temperature
- light
- Humidity

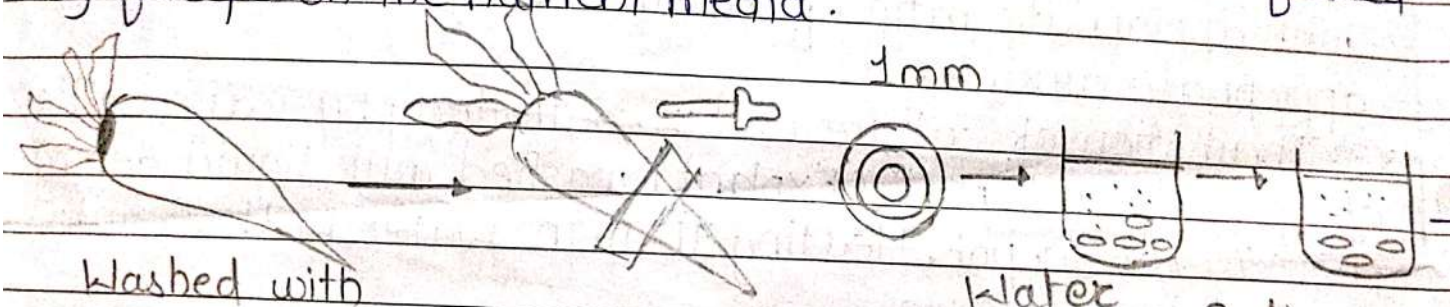
For proper initiation of callus tissue:

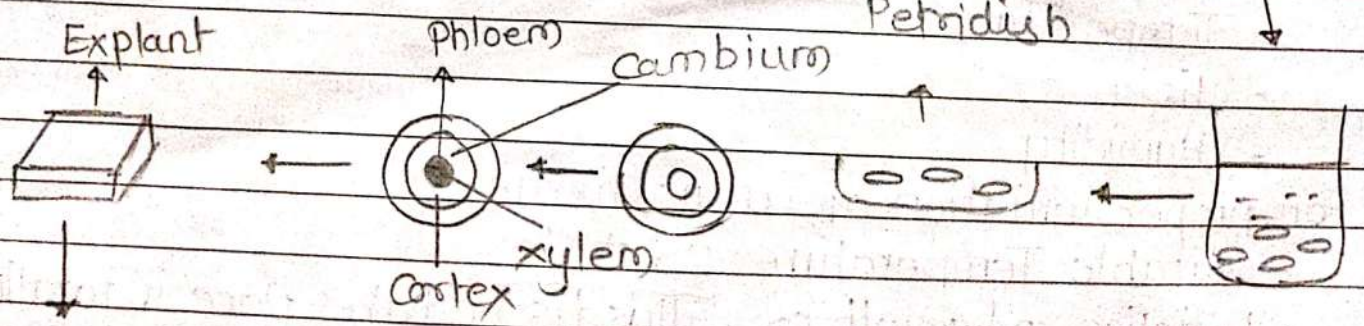
- Suitable Temperature 25 ± 2°C
- Initiation and growth of callus tissue takes place in totally dark conditions or in other plant material particular photo-period 16 hrs (light) and 8 hrs (dark) ug any initiation & growth of callus tissue.
- Artificial light intensity 200 to 3000 ug
- Fluroscent lamp used in lab for providing light
- Relative humidity range is 50 to 60%.

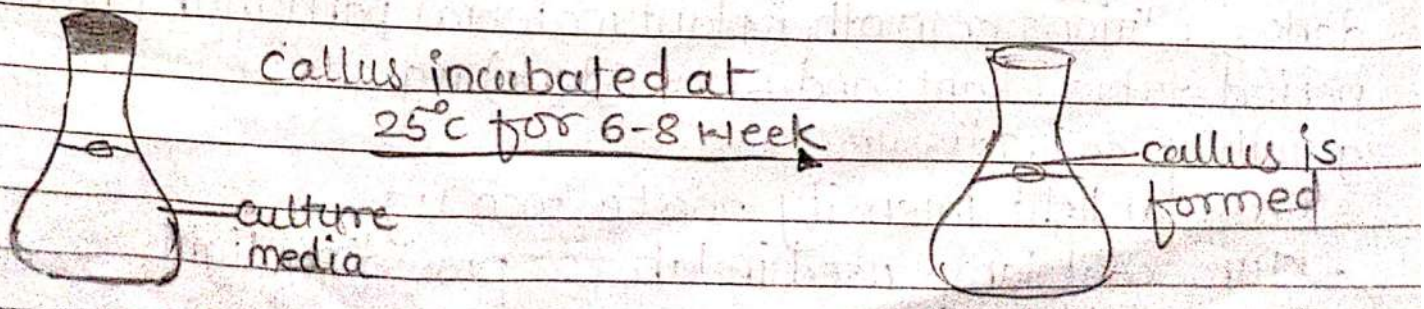
GoodLuck | Page No.
Date

Protocol :- Callus Culture :-

(1) A fresh tap root of carrot is taken and washed thouro-ughly tap water to remove surface detritus.
(2) Tap root is then dipped into 5%. Teepol for 10 min.
(3) Treated with sodium Hypochloride solution.
(4) Washed with distilled water to remove completely hypochlori-de (5) carry in then transfer to sterilized petridish contain-ing filter paper.
(6) Each piece contains part of phloem cambium and xylem.
(7) Always needs of petridish is replaced after each manupu-lation.
(8) The closer from culture is removed and flamed the upper-most opened white holding the tube explant is transferred by forceps on the nutrient media.







Morphology of callus tissue:

- Callus tissue is proliferate as amorphous mass of cell having no regular shape.
- Internal structure of callus tissue is revealed by light microscopy and electron microscopy.
- Formation of xylem and phloem within callus tissue is known as cytodifferentiation

Texture of callus culture:

- Callus tissue can vary considerably in appearance and texture two categories into :—

1) Soft Callus
- Friable in Heterogeny may

2) Hard Callus.
- Gainut trachieds like cells ~~callus~~ and packed cells.

— Habituation :-

— Callus tissue is able to grow on standard maintain medium & basal medium which is devoid of growth harmone. They property of callus tissue 'habituation'.

— Crown quantum or tissue one from backeria artificially for culture otherwise micro-organism can grow soon.

Chromosomal variation in callus tissue:

- Chromasomal variation may occur genetically in the cells of callus tissue.

Genetically basic or chromasomal variation :-

1. Genomic heterogenily & chongeyingen.
2. Variation of chromasomal number ranges from or plaidy to different level of polypoloid such as tetropoloid hexapoliod.
3. Occurence of both diploid & different level of polypoid cell in the same callus tissue is known

GoodLuck | Page No.
Date

4. Ploid level increased kinek kinine.
5. 2-4 D strong auxine like a 2.4 D induce the ploid in callus culture.

~~Imperative:-~~ Importance:-

1) Whale plant can regenerate in large number from callus tissue through manupulation of nutrient & harmonal constituents in culture medium theat is knokin as 'Regeneration'

> This phenomenon is knokin as somatic embryogenesis used to rise in whole plant.

> Callus tissue is good source of genetic or variability soit may be vary in cells of callus tissu

Gotdar

Name- Pranav Raju Sandugade
Roll no. 8465
Sub. Biotech (opt.).

DATE 24/09/23

ass.

Q. Design of fermentor.

Ans. Fermentor is a specially designed vessel in which large quantity of fementation medium is added with fermentation organism which provides best possible environmental and process control for the biosynthesis of fermentation product. The design of the fermentor depends upon the purpose for which it is to be utilized. Therefore, for every fermentation process there will be separately designed fermentor. Following criteria are used in designing and constructing a fermentor.

(i) Fermentor should provide best possible growth and biosynthetic conditions for fermentation organism and allow ease of operation for maintaining fermentation conditions.

(ii) The vessel must withstand pressures of large volumes of aqueous medium and should be fabricated of a material which will not get corroded by fermentation product or release toxic icons to growth medium.

iii) it should have provision for control or contamination and maintainance of aseptic conditions during fermentation process.

iv) if fermentation process is aerobic, it should provide sterile air and it is easily available to the fermentation microorganism and if process is anaerobic, it should maintain anaerobic condition during the fermentation process. During fermentation process if any gas like Co_2 is produced by microbial metabolism, it should be flushed from the medium.

v) Adequate agitation and stirring mechanism should be present to mix the microorganism throughout the medium to make nutrients and oxygen more available to the individual microbe.

vi) it should provide device for foam control either by mechanical control or by using antifoam agents.

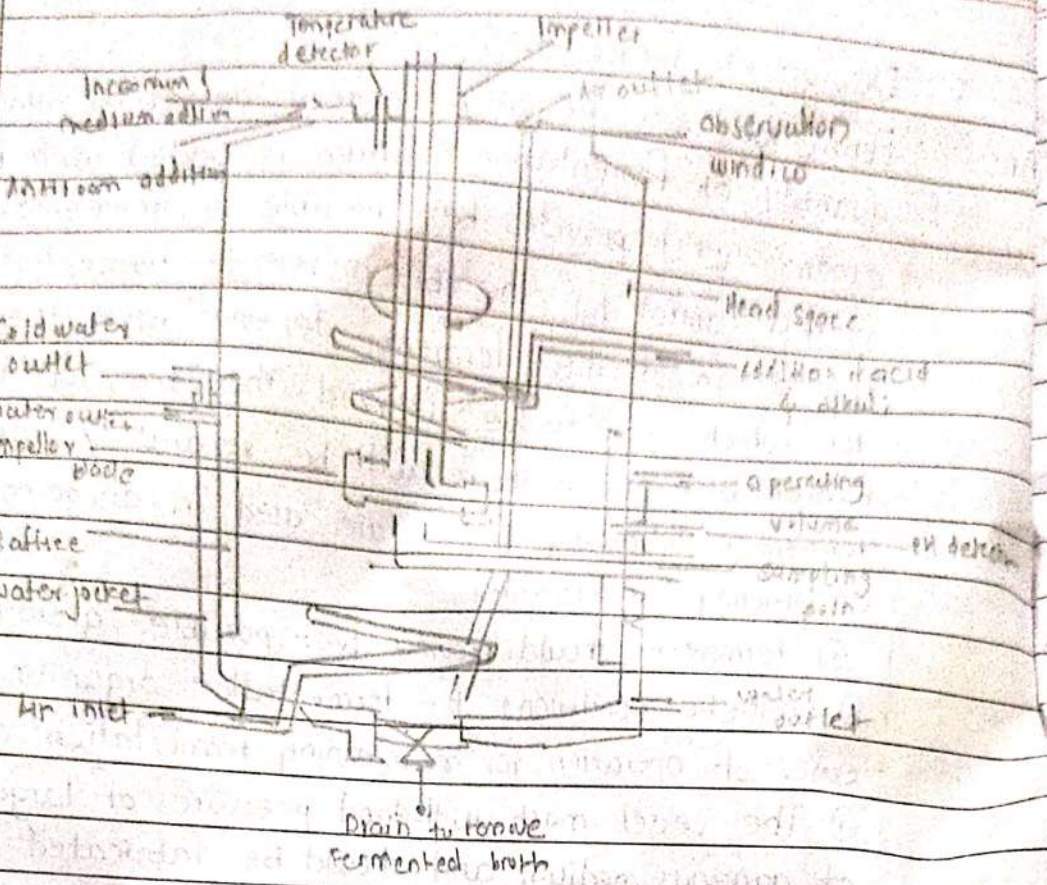


Fig - A typical Fermentor.

viii) fermentor should provide aseptic means for introduction of inoculum at the initiation of fermentation as well as withdrawal of samples for analysis during the fermentation process.

ix) it should provide some means of sterilization of fermentor medium and air used during the fermentation.

x) There must be drain at the bottom of the fermentor for removal of fermented broth from the tank and access to inside the fermentation tank for cleaning the fermentor after completion of the fermentation.

xi) if required by the fermentation process there should be ancillary tanks to provide inoculum, extra nutrients & precursors, acid, alkali and antifoams without employing extensive piping.

Fermentors are available in varying sizes. The sizes are stated based on the total volume capacity of the fermentor. However, the actual operating volume is 3/4th or 4/5 th of the total volume. The remaining volume is called 'head space' left at the top the fermentor above the liquid medium to allow for splashing, foaming

and aeration of the fermentation medium.

The types and volumes of the fermentors are as follows:-

a) Small laboratory fermentor :- 1-2 liter & maximum 12-15 liters. Capacity.

b) Pilot plant fermentor :- 100-500 liters and maximum upto 10,000 liters.

c) large scale or Industrial fermentor :- 20,000-50,000, liters & maximum upto 5,00,000 liters. Fermentor larger tha this size are rare but when used have spherical shape and capacity upto 20,00,000 liters.

Small scale fermentors are used in groups of 2-3 or more in research and development of fermentation process, ~~Plot~~ Pilot plant fermentors are used to optimize the fermentation condi ions. to be used in large scale fermentation where as large scale fermentors are used for actual production.

o. Construction of Fermentors :- The material used for construction of fermentor is selected on the basis of its use, on their ability to withstand pressure, sterilization and corrosion by the fermentation product, potential toxicity to fermentation organism & the cost. certain fermentations are sensitive to metallic ions that may dissolve from liner of the tank. Thus. Construction material for a fermentation tank must be considered in regard to the particular fermentation that is to be conducted in the fermentor Normally used materials are wood, glass, steel stainless steel, iron, copper, and mild steel or combination of materials for the contruction of fermenton.

o Parts of the fermentor & their function :- The fermentation tan is equipped with various devices for controlling various parameters during the fermentations process. Every fermentor will have different part depending on the process, whether it is aerobic or anaerobic. we will discus each part of the fermentor on the basis of its use in the control of fermentation process.

i] Control of Temperature ÷ Heat is produced during micro activites and mechanical agitation. if temp. raised by th heat is no ideal ~~and~~ for fermentation process, heat may ha to be added or remove from the system. To provide or remove heat, fermentor is provided will a jacket or internal coils. Cold or hot water is circulated through the jacks or internal coils to achieve the correct temp. for fermentation process.

ii) Aeration and Agitation - The main purpose of aeration an agitation is to provide oxygen required to the metabolism of microorganism where an agitation is required for the fermentation organism to get suspende uniformly in the fermentation medium. The structural components of the fermentor involved in the aeration & agitation are:

a) The Impeller or agitator.
b) Stirrer gland and bearing
c) Baffles
d) sparger (the aeration system).

(a) The Impeller (agitator) - The impeller has two main functions.

1. To disperse air bubbles uniformly in the medium.
2. To maintain a uniform environment throughout the vessel Content.

An impeller is mounted to a shaft extending through a bearing in the lid of the fermentor & driven by an external power source such as motor with adjustable pulleys & belts or by direct drive. The size, number and their positions of the impellers depend on size of the fermentor. In vessels, more than one impeller is needed for adequate aeration & agitation. The impllers is positioned at 1/3 or 1/2 of the vessel diameter above the base of the vessel. The impeller blades are attached to the impeller to facilits aeration and agitation.

show be properly sealed to maintain aseptic condition in the fermentors. To achive proper sealing, stirrer gland and bearing assemblies are used :-

1. Packed gland seal.
2. simple bush seal.
3. mechanical seal.
4. magnetic drive.

c) Baffles - Four baffles are normally attached on the walls of fermentors. They are metal or glass strips. 1/10 of the vessel diameter meant to prevent vortex & to improve aeration efficiency.

d] Sparger - it is a device to introduce air into the liquid medium. The air is introduced in the form of bubbles with the help of the ~~liquid medium~~. ~~The air~~ sparger. The sparger is used on its own or with mechanical agitation & on the basis of its use size of the air bubble to be introduced is determined.

iii) sterilization of the fermentor, medium and the air supply :-

The fermentor is designed for sterilization by steam under pressure. The medium may be sterilized either in the vessel or separately and subsequently added aseptically. if medium is to be sterilized in the fermentor, temp. of the medium should be raised prior to the injection of live steam to prevent the formation of condensate. Every point of entry and efit from the fermentor is a potential source of contamination, so ~~th~~ steam should be introduced through all the entry and exit points except the air outlet. Sterile air will be required in very large volumes in many aerobic fermentation processes. This is accomplished by passing the air through heat, filteration with fibrous material and granular material. Heat is too costly, therefore, air filters consisting of steel casing with an air inlet base and on outlet at the top of the fermentor are used. The packing

materials of the filter (5-15 μm diameter) are glass wool, glass fiber or mineral slag wool supported on a perforated plate are used to make filter assembly. This filter assembly is sterilized along with fermentor & then used for sterilization of air.

iv) Addition of Inoculum :- The inoculum required for fermentation is prepared separately in another tank. To prevent contamination, inoculum tank and fermentor are maintained under positive pressure and addition point is equipped with a steam supply. Through the pipelines, transfer of inoculum to the fermentor tank is made.

v) Addition of nutrients & other supplements :- If the fermentation process requires intermittent addition of nutrients & other supplements, then these substances are stored separately in different tanks in sterilized condition. As per requirement these substances are added to the fermentor through the pipelines under aseptic condition.

vi) Sampling :- During the fermentation process samples are withdrawn for different analytical tests under aseptic conditions. A specially designed sampling port (point) is fitted to large fermentor.

vii) Foam control - Foam is produced in the fermentation tank due to aeration & agitation. and if medium contains proteins & peptides during the fermentation. This foam can create serious problem for the fermentation process as the foam rises and gathers in head space of the fermentor like contamination. decreased aeration and loss of medium. Therefore, foam should be controlled to prevent the problems. The usual procedure for controlling foam is to add antifoam agents and by using supplementary impeller blade mounted high in the tank which breaks the foam during its rotation. The antifoam agents are surface tension reducers which decrease stability of the foam bubbles so that they burst.

viii) Controle of pH :- The metabolic activites of fermentation micro-organism may change pH of the fermentation medium. The pH of the medium should be maintained constant to optimum production of the product. This is accomplished by constant detection by pH recorder. The change in pH is immediately corrected by using sterile acid or alkali kept separately in ancillary tank with the help of automic transfer mechanism.

ix) Control of Redox :-

The oxidation - reduction potential of a medium influence the fermentation microorganism during production of the product. it is measured as a voltage (mV) with the help of measuring electrode consisting of gold, platinum. or iridium. The rodox potential may be controlled by sparging with oxygen or nitrogen or by adding cysteine, ascorbic acid. sodium thioglycolate or by glucose.

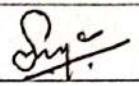
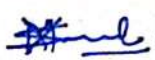
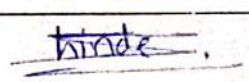
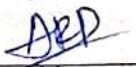
VIVEKANAND COLLEGE KOLAPUR (AUTONOMOUS)

DEPARTMENT OF BIOTECHNOLOGY OPTIONAL (Rollcall 2023-24)

B.Sc. III

Internal Exam

	Name of student	Signature
8450	Awate Prachi Uday	
8451	Chendage Sandhyarani S.	
8452	Choapdar Vedanshu Vijay	
8453	Chougule Rutuja Balaso	
8454	Desai Tasnim Yunus	
8455	Ganap Pradeep Bhimrao	
8456	Halunde Pratiksha Pandit	
8457	Jadhav Abhijeet Amar	
8458	Kamble Aman Sanjay	
8459	Koli jai Satish	
8460	Patil Aishwarya Shashikant	
8461	Patil Sanika Gajanan	
8462	Patil Shradha Dyandev	
8463	Pendhari Yusaira Zahir	
8464	Salokhe Janhavi Vikrant	

8465	Sandugade Pranav Raju		22/30
8466	~~Supre Spriy~~ Milind Supe Supriy		26/30
8467	Sarvagode Mahima Vikas		26/30
8468	Shinde Abhay Tatoba		20/30
8469	Shinde Priyanka Prakash		16/30
8470	Thombare Ankita Rajendra		29/30
8471	Yedurkar Koustubh Kishor		20/30

B.Sc (Part –III)(Semester-V)Examination

BIOTECHNOLOGY (Optional)

Animal Tissue Culture

Internal Examination

Date - /10/2023

Time :

1. The culture of native tissue(i.e undisaggregated tissue) that retains most of in vivo histological features is regarded as.....
   - A)organ culture
   - B)cell culture
   - C) histotypic culture
   - D) organotypic culture

2. ..... refers to culture of dispersed(or Disaggregated) cells obtained from original tissue or from cell line
   - A)organ culture
   - B) cell culture
   - C) Histotypic culture
   - D) organotypic culture

3. The cultureing of cells for their reaggregation to form a tissue like structure represents .....
   - A)organ
   - B)cell
   - C) histotypic culture
   - D) organotic

4. ..... Culture technique involves recombination of different cell types to form a more defined tissue or an organ
   - A)organ
   - B)cell
   - C)histotypic
   - D) organotypic

5. The culture produced by freshly isolated cells or tissues taken from an organism is .....
   - A)cell culture
   - B) primary culture
   - C)cell line
   - D) organotypic culture

6. Subculturing of primary culture gives rise to .....
   - A)cell line
   - B)organ
   - C)cells
   - D)tissues

7. Important alternative artificial substrates are..... and .....
   - A) Microcarriers and glasses
   - B) Microcarriers and metal ions
   - C) Microcarriers and metallic substrates
   - D)metallic substrates and palledium

8. Maintenance of proper ..... is necessary to eliminate various contamination
   A)physical condition
   B)growth condition
   C)aseptic condition
   D)incubation condition

9. .....cultures (particularly mammalian cell cultures) are useful for production of many pharmaceutically or medically important proteins
   A)animal cell
   B) plant cell
   C) tissues
   D)organ

10. The accidents or risks associated with biological materials are regarded as .....
   A)Biohazards
   B)Personal risk
   C)Physical risk
   D) radioisotope risk

11. The basis for cell culture media was..... solution which was originally used to create physiological pH and osmolality required to maintain cells in vitro
   A)inorganic salts
   B)balanced salt
   C) organic salts
   D) major or macro salts

12. Most of cells can grow at pH in range of .....
   A) 5.4 -5.8
   B) 5.0-5.6
   C) 7.0-7.4
   D) 7.6-8.0

13. The indicator phenol red is most commonly used for visible detection of .....of the media
   A)temperature
   B)pH
   C)CO2 concentration
   D)osmolarity

14. What HEPES (Hydroxyethyl piperazine 2-sulfonic acid) is .....
   A) buffer
   B) nutrient
   C)hormone
   D)media

15. Balanced salt solution (BSS) is primarily composed of .....
   A)amino acids
   B) proteins
   C)serum
   D)inorganic salts

B.Sc (Part –III)(Semester-V)Examination

BIOTECHNOLOGY (Optional)

Plant Tissue Culture

Internal Examination

Date - /10/2023 **Time :**

1. Laminar air flow cabinet is most suitable, convenient& reliable instrument for .....
   A).Incubation
   B).Contamination
   C).Aseptic work
   D).Cell count

2. For .....of explant (plant material) 5-10% sodium hypochlorite solution is used
   A).Surface Sterilization
   B).Cleaning
   C).Autoclaving
   D).Debris removal

3. Callus cultures can be continuously maintained by .....
   A). Horticulture
   B).Sericulture
   C).Culture media
   D).Serial Subculture

4. Formation of .....within callus tissue is known as cytodifferentiation
   A).Xylem
   B). Meristematic cells
   C). Embryoids
   D). Xylem & Phloem

5. HEPA Stands for.....
   A). High efficiency particulate air
   B). Heat effective particulate air
   C). High efficiency particle air
   D).Heat efficiency particle air

6. Callus proliferates as an ..... mass of cells.
   A). Organised
   B). differentiated
   C). defined
   D). unorganized

7. Cell Count data obtained from-
   A). Micropipette
   B).Haemocytometer
   C).Glasswares
   D).Counter

8.Organogenesis &/or embryogenesis occur mostly from .....cells

A). Haploid
B). Diploid
C). Polyploid
D). Tetraploid

9. When the ratio of Kinetin to auxin was ..... , only shoot developed. This is known as .....

A) higher, caulogenesis
B) lower, caulogenesis
C) higher, rhizogenesis
D) lower, rhizogenesis

10. A relatively high..... ratio, induced root formation in tobacco callus tissue, whereas low ratio of same Harmons favored shoot production

A) auxin : cytokinin
B) auxin
C) hormone
D) cytokinin: auxin

11. The instrument used for moist heat sterilization is.....

A) hot air oven
B) filter
C) autoclave
D) microwave oven

12. Production of ..... from cells of tissue culture is called organogenesis

A) adventitious root
B) adventitious shoot
C) adventitious root and shoot
D) shoot primordia

13. Androgenesis is in vitro development of..... originating from totipotent pollen grains through series of cell division and differentiation

A) Pollen
B) Anther culture
C) Totipotency
D) haploid plant

14. Totipotency is..... potential of plant cell to produce entire plant

A) magnetic
B) cytological
C) genetic
D) cellular

15. .....is a period where cells adjust themselves to nutrient medium and undertake all necessary synthesis prior to cell division.

A) Log phase
B) Lag phase
C) exponential phase
D) Stationary phase

VIVEKANAND COLLEGE KOLAPUR (AUTONOMOUS)

DEPARTMENT OF BIOTECHNOLOGY OPTIONAL (Rollcall 2023-24)

B.Sc. II

	Name of student	26/10/23	27/10/23	28//10/23	30/10/23	~~16/10/23~~	31/10/23	~~1/10/23~~ 6/11/23	2/10/23	3/10/23	4/10/23
7888	Attar Saniya Salim										
7889	Awate Gayatri Anil	G.Awate	G.Awate	G.Awate	G.Awate		G.Awate	G.Awate			
7890	Bagwan Heena S.						H.Bagwan.				
7891	Desai Sushant K.										
7892	Ekshinge Vrushali S.	Vrushali	Vrushali	Vrushali	Vrushali		Vrushali	Vrushali			
7893	Kazi Afreen Javed										
7894	Kuranakar Mudita S.						M.S.K.				
7895	Katkar Siddhi Sanjay										
7896	Kazi Sadiya Z.	Kazi	Kazi	Kazi	Kazi			Kazi			
7897	Kuchekar Swapnil B.										
7898	Kumbhae Diksha R.										
7899	Kundale Shruti M.	S.M.K	S.M.K		S.M.K						
7900	Lavate Sneha M.										
7901	Lohar Sayali P.	Splohar	Splohar		Splohar						
7902	Mahadik Sakshi S.										

							31-10-23	6-11-23				
7903	Manekar Rutuja M.											
7904	Patil Neeta B.	Patil	Patil	Patil	Patil		Patil					
7905	Patil Pradnya R.	Patil			Patil							
7906	Patil Rutuja S.											
7907	Patil Shreya B.	Patil	Patil	Patil	Patil		Patil	Patil				
7908	Patil Snigdha S.											
7909	Shewale Yogesh S.	Yogesh	Yogesh				Yogesh	Yogesh				
7910	Sonawane Niharika D.											
7911	Suryawanshi Aditi V.	Adi	Adi	Adi	Adi		Adi					
7912	Unnahale Priyanka S.	Unhale	Unhale	Unhale	Unhale		Unhale					
7913	Vora Kritika B.											
7914	Vadhava Mehek V.	Mehek		Mehek	Mehek		Mehek					
7925	Kamble Sanika											
	Yedage Sneha											
	Dongare Sonam											
7927	Kashid Dhanshree	Kashid			Kashid		Kashid					

VIVEKANAND COLLEGE, KOLHAPUR

EMPOWERED AUTONOMOUS

B.Sc. II Optional Biotechnology
Internal examination 23-24
Paper V & VI

Name of student- Priyanka Shivaji Unhale

Roll No. 7912

Q.1 Choose the correct alternative

Date 23/10/2323

Section I enzyme technology

1. Active site is made up ------ .

a. Amino acid
b. fatty acid
c. monosaccharides
d. nucleotides

2. Induced hypothesis was proposed by------. Karl Ereky

a. Email Fisher.
b. Karl Ereky.
c. Kishland.
d. Koshland

3. According to the induced fit hypothesis enzyme is ---- structure.

a. Rigid.
b. Planned Rigid
c. Soft.
d. Hard

4. Enzyme activity is the amount of product formed or -------- utilized by specified amount of enzyme per unit of time.

Substrate

a. Substrate.
b. Activator
c. Inhibitor.
d. Modulators

5. Km value in enzyme activity represents concentration of ---- used.

a. Product.
b. Coenzyme. Substrate
c. Cofactor.
d. Substrate

6. According to enzyme activity. Q.10 is represents ------ enzyme activity after 10 degree rise in temperature.

a Half.
b. Double.
c. No
d. Same

7. At high temperatures and pH enzyme activity lowers due to ------ of enzymes.

a. Solubility.
b. Renaturation. Denaturation
c. Denaturation.
d. High activity

8. Vmax indicates ------.

a. All enzyme active sites are filled
b. All enzyme active sites are not filled

c. Both

d. Initial active site is filled

9. The lock and key hypothesis was proposed by Email Fisher

a. Koshland.

b. Burk.

c. Eadie Hofstee.

d. Email Fisher

10. This enzyme activity graph is not a show Bell shape curve. Temperature

a. Substrate.

b. Temperature.

c. PH.

d. Both

11. In which plot 1/v vs 1/s is plotted in Han's plot

a. Han's plot.

b. Lineweaver Burk plot.

c. Eadie Hofstee.

d. Neer plot

12. In effect of substrate concentration on enzyme activity ------ type of curve is obtained.

a. Hyperbolic.

b. Parabolic. Sigmoidal

c. Bell.

d. Sigmoidal

13. Enzyme activity is presented in ------ this unit.

a. Kattal. calories

b. international units.

c. Mol.

d. Calories

14. Ribozyme is made up of RNA

a. RNA

b. DNA.

c. Protein.

d. Lipid

15. Enzyme term was discovered by Berjelis

a. Bragg

b. Berjelis.

c. Kuhne.

d. Mulis

Section II Molecular Biology

7/15 Fotdar

16. DNA and RNA are the principal of --- living organisms are chemically called nucleic acids and contains C, O,N& P Genetic material

a. Genetic material

b,cytosolic material

c.Nucleotides

d.Nucleus

17.enzymes act to hydrolyse or breakdown a polynucleotide chain into its components Nuclease

a.Polymerase

b.Nuclease

c.Replicase

d.RNA Pol

8. DNA replication in prokaryotes and eukaryotes is attained in discrete units called Replication Fork

a. Replication Fork

b.primase

c,Helicase

d. Replicon

19.------- are ATP dependent unwinding enzymes which promote the separation of two parental stands and establish replication fork

a.DNA Replicase
b.DNA Helicase
c.DNase
d.RNase

20. Model of replication, in which… which of the following is the structural formula of cytosine?

2,6- dioxy5 methyl primide

a.2,6- dioxy, 5-methyl pyrimidine
b.2,6- dioxypyrimidine
c.2-oxy,6-aminopyrimidine
d.2-amino,6-oxypurine

21. which of the following is the structural formula of cytosine? 2,6-dioxyprimidine

a.2,6- dioxy, 5-methyl pyrimidine
b.2,6- dioxypyrimidine
c.2-oxy,6-aminopyrimidine
d.2-amino,6-oxypurine

22.The ratio of purine: pyrimidine in DNA is---0.5---.

a. 0.5
b.0.8
c.1.2
d.1

23. Enzyme called ....Topoisomerase....relax supercoil by attaching to transiently supercoil duplex nicking one of strands and rotating it through unbroken strands,

a.Topoisomerase
b.SSBPs
c.Tus protein
d.DNA Ligase

24. The separated strands are inhibited from subsequently reannealing by ..... which binds to both separated strands.

a.SSPs
b.SSDs
c.DnaA
d. SSBPs

25. Which of the following DNA polymerase involved in replication of E.coli having function of DNA repair, gap filling and primer removal. DNA polymerase 1

a.DNA polymerase I
b.DNA polymerase II
c.DNA polymerase II
d.DNA polymerase IV

26.This a sole polymerase participating in mitochondrial DNA replication. DNA Pol epsilon

a.DNA Pol alpha
b.DNA Pol beta
c.DNA Pol gamma
d.DNA Pol epsilon

27. In most organisms, AUG codon is start or initiation codon.

a. AUG b. UAG

c. UAA d. UGA

28. Enzyme DNA helicase catalyzes formation of phosphodiester bond between 3'OH group at end of one DNA fragment and 5'- phosphate group at end of other.

a. DNA polymerase b. DNA helicase

c. RNA polymerase d. DNA ligase

29. The single origin of replication required for E.coli chromosomal replication is called Oric .

a. origin b. 9- mer

c. 13- mer d. OriC

30. Transcription is a process of formation of the transcript

a. DNA b. protein

c. transcript d. polypeptide

Model of replication in which parental 2 plex DNA gives rise to 2 identical daughter duplex DNA each containing one original parent strand & one new DNA strand is called ..... replication

(A) Semi conservative (B) conservative

(C) Despresive (D) ~~conservative~~ eUkaryotic

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a. AUG b. UAG

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Roll No.	Name	Sign
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2) 7904	Sayali Pundlik lohar	
3) 7903	Rutuja M. Mandekar	
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5) 7912	Priyanka Shivaji Unhale	Unhale
6) 7897	Swapnil B. Kuchekar	
7) 7913	Kritika B. Vora	
8] 7909	Yogesh. S. Shewale	
9] -	Sanika Sanjay Kamble	
10) 7910	Nihanika. D. Sonawane	
11) 7889	Gayatri A. Awate	Awate
12) 7896	Sadiya. Z. kazi	Kazi
13) 7907	Shreya B. Patil	
14) 7890	Heena. S. Bagwan.	Bagwan
15) 7894	Mudita. S. Karunakar.	M.S.K.

Assignment No. 1

Sakshi Sadashiv Mahadik
B.Sc. II (Biotech optional)
Roll No: 7902

Q.No1 Write long note on prokaryotic replication (E.coil)

⟹ • Semiconservative replication - It is crucial that the genetic material is reproduced accurate When Watson and Crick worked out the double helix structure of DNA in 1953, they recognized that the Complementry nature of the two Strands - A paired with T and G paired with C - might play an important role in its replication. This model of replication, In which, In which a parental duplexes DNA gives rise to two identical daughter duplexes DNA, each containing one original parental strand and one new strand. is called Semiconservative replication. In Conservation replication, the original parental DNA double helix acts as a template for a new one, one daughter DNA double helix would Consist of the original parental DNA. In dispersive replication Some parts of original parental DNA double helix are Conserved, and some parts are not.

• Replicon and origin of replication - DNA repli-Cation does not start at random locations but at particular sites, called the origins of replications. A unit of DNA In which an individual acts of replication occurs is called a replicon. Replicon can be linear or Circular. The origin of replication is a cis-acting sequence ie. able to affect only that molecule of DNA on which it resides origins are usually AT rich

Sequence. The result of DnaA binding is that the double helix opens up (melt's) within the tandem array of three AT-rich, 13-mer repeats located at one end of the oriC sequence.

DNA Polymerase - DNA Polymerse Catalyze the Synthesis of DNA. DNA polymerases are of two types - template-dependent and template-independent. Template-dependent DNA Polymerases are further classified into DNA-dependent DNA polymerase and RNA-dependent DNA polymerase.

DNA Polymerase I - Is the first DNA Polymerase discovered in E-coli. It is also known as Kornberg enzyme. It was composed of 928 amino acids residues. It possess three enzymatic activities. 5'→3' polymerase activity, 5'→3' exonuclease and ~~5'→3'~~ 3'→5' exonuclease activity. DNA polymerse I performs functions such as primer removal (with 5'→3' exnuclease activity) gap filling (5'→3') polymerase activity and DNA repair.

DNA Polymerase II - is a monomeric protein and has 5'→3' Polymerase and 3'→5' exonuclease activity. It has low processivity and low Polymerization rate. It Serves as an alternative DNA repair polymerase.

DNA polymerase III - is the primary enzyme involved in DNA replication. It is multiprotein Complex that consists of 10 different poly-peptides (α, ε, θ, τ, γ, χ, ψ, β, δ, δ'). The hallmarks of pol III are its very high polymerization rate and high proccesivity. DNA pol III holoenzyme has four components - two copies of Catalytic Core, two copies of dimerization Component, two copies of processivity Component and one copy of Clamp loader.

Inc

• Major DNA
of E. coli ge

Enzyme
Structural gene
Subunits
3'→5' exonuclease
5'→3' exonuclease
polymerization rate
processivity
function

• DNA
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3.
4.
5.

Include diagram in replicatn long note at least 1 or 2

- Major DNA Polymerases involved in replication of E. Coli genome

Enzyme	DNA poly-I	DNA poly-II	DNA poly-III
structural gene	pol A	pol B	pol C
Subunits	1	1	10
3'→5' exonuclease	yes	yes	yes
5'→3' exonuclease	yes	No	No
polymerization rate	~20 nucleotides / sec	~40 nucleotides / sec	~1000 nucleotides / sec
processivity	~200 nucleotides	~1500 nucleotides	~500 nucleotides
function	DNA repair, gap filling, primer removal	DNA repair	Main replicating enzyme

- DNA replication in E. Coli - The chromosomal DNA of E. Coli is replicated bidirectly from a single origion of replication, oriC. During replication, it resembles to the Greek letter theta (θ) hence, this mode of replication is known as θ-replication and it occurs in three steps:

Initiation - DnaA protein intiates replication in E-Coli at oriC. Binding of DnaA to the 9-mer repeats of oriC facillitates the f initial strand separation or melting of duplex DNA at the oriC 13-mer repeats. one molecule of DnaB, a hexamer of identical subunits, clamps around each of the two single strands in the open complex formed by DnaA. DnaC protein, which acts as a helicase loader.

The sequence of events during initiation:

1. Binding of DnaA protein to oriC
2. Loading of DNA helicase.
3. Helicase opens helix and binds primase to form primosome
4. Synthesis of RNA primer.
5. Initiation of DNA polymerization by DNA Polymerase.

2. Elongation- DNA polymerase catalyze the step by step addition of deoxyribonucleotide units to growing DNA chain. The DNA chain elongation reaction catalyzed by DNA polymerase in which the hydroxyl group at the 3' end of the primer attacks the α- phosphoryl group of the incoming nucleoside triphosphate.

Specify leading & lagging strand in Content

As Compare to leading strand it is synthesized discontinuously from multiple primers. Short pieces of DNA, called okazaki fragment The size of okazaki fragments are 1000 to 2000 nucleotides in bacterial cells and 100 to 200 nucleotides in eukaryotic cells. As each Okazaki fragment formation completes, the RNA primer of the previous fragment is removed by the 5'-3' exonuclease activity of DNA polymerase.

Termination- Bacterial genomes are replicated bidirectionally from a single point, which means that the two replication forks should meet at a position diametrically opposite the origion of replication on the genome map. Replication of genome terminates at terminus region containing multiple copies of abouthd 23 bp sequences called Ter (for terminus) Sequences. Seven of these have been identified in the E. Coli genome, each one acting as the recognition site for a Sequence -Specific DNA-binding protein called Tus (terminus utillization Substance) protein.

- Rolling Circle replication- Replication via theta forms is not the only method by which circular DNA replicate their genetic information.

Another method is rolling circle replication that generates linear copies of a genome rather than circular copies. In rolling circle mode a replication fork proceeds around a circular template for an idefinite number of revolutions.

Q.NO.2. Write Short note on Structure of DNA.

⇒ - Polymeric chemical compound contains smallest building blocks called deoxyribonucleotides.
- Each deoxyribonucleotide is made up of 3 moieties - phorsphoric acid mol (phosphate); Pentose Sugar deoxyribose, & Pyrimidine & purine N bases.
- 4 major kinds of N bases have been found in DNA → two ringed purines, Adenine (A) & Guanine (G) & one ringed pyrimidines, Cytosine (C) & thymine (T).
- DNA is made of two linked strands that wind around each other to resemble a twisted ladder — a shape known as a double helix.
- 4 N-bases pair together in the following way; A with T, and C with G. These base pairs are essential for the DNA's double helix structure, which resembles a twisted ladder.
- 2 Polynucleotide strands are held together by H bonds betⁿ specific pairs of purines & pyrimidines
- H bonds betⁿ purines & pyrimidines are such that A can bond only to T by 2 H bonds & G can bond only C by 3 H bonds & no other alternative is possible betⁿ them.
- Thus 2 strands can anti-parallely that

VIVEKANAND COLLEGE, KOLHAPUR (EMPOWERED AUTONOMO

Department of Biotechnology (Optional)

B.Sc.III Roll No. 2023-24

Sr.No.	Roll No.	Name of student	Sign
1	8450	Awate Prachi Uday	
2	8451	Chendage Sandhyarani S.	
3	8452	Choapdar Vedanshu Vijay	
4	8453	Chougule Rutuja Balaso	
5	8454	Desai Tasnim Yunus	
6	8455	Ganap Pradeep Bhimrao	
7	8456	Halunde Pratiksha Pandit	
8	8457	Jadhav Abhijeet Amar	
9	8458	Kamble Aman Sanjay	
10	8459	Koli jai Satish	
11	8460	Patil Aishwarya Shashikant	
12	8461	Patil Sanika Gajanan	
13	8462	Patil Shradha Dyandev	
14	8463	Pendhari Yusaira Zahir	
15	8464	Salokhe Janhavi Vikrant	
16	8465	Sandugade Pranav Raju	
17	8466	Supre Spriy Milind	
18	8467	Sarvagode Mahima Vikas	
19	8468	Shinde Abhay Tatoba	
20	8469	Shinde Priyanka Prakash	
21	8470	Thombare Ankita Rajendra	
22	8471	Yedurkar Koustubh Kishor	

Vivekanand College Kolhapur
(Empowered Autonomous)
Department of Biotechnology (Optional)

Internal Examination - Semester V

Paper -DSC-1009-E2 - Large Scale Manufacturing Process and Specific Fermentation .

Section I - Credit I and II

Select the correct option and rewrite the answer of following question

Total marks 30

Q.1 Large scale fermentor is of ---------- liters capacity.
- a. 1,00,000
- b. 1-2
- c. 50-100
- d. None of these

Q.2 ----------are used for aeration in the fermentor.
- a. Spargers
- b.Baffeles
- c.Steam
- D.none of these

Q.3 Primary Stocks are maintained by ----------
- a. Freeze drying
- b.Refrigeration
- c.Incubation
- d.None of these

Q.4 ----------is used for antifoaming agent.
- a.Cidar wood oil
- b.Mineral oil
- c.Castor oil
- d.Coconut oil

Q.5 Strain Improvement is done by ----------
- a. Mutation
- b.Translation
- c.Transcription
- d.conjugation

Q.6---------- is a raw material useful for the production of alcohol.
- a. sulphide waste liquor
- b. Molasses
- c. Starch
- d. Alkanes

Q.7 Sulphide waste liquor is obtained from ----------.
- a. Wood industry
- b. Sulphur production
- c. Sugar cane industry
- d. Paper pulp industry

Q.8 The replia plate technique is used for ----------.
- a. Isolation of auxotrophs
- b. isolation of reverants
- c. Isolation of analogue resistant mutants
- d. Isolation of phototropism

Q.9 Streak plate and Spread plate technique are used for obtaining ----------.
- a. mixed culture
- b. Pure culture
- c. Turbid growth
- d. None of these

Q.10 Impellers ,Baffles,Spargers,are the parts of fermentor assemble which carry out important function like ---------- and ----------.

Q.11 ----------chromatography is used to separate biomolecules on the basis of biological activity.
- a. Ion exchange
- b. Gel filtration

c. Affinity
d. HPLC

Q.12 ---------- is the process used to separate molecules on the basis of density

a. Drying
b. Chromatography
c. Centrification
d. Filtration

Q.13 In ----------Technique osmotic pressure is applied.

a. Filtration
b. Precipitation
c. Reverse osmosis
d. Crystalization

Q.13 ----------chromatography is used to extract citric acid.

a. Ion exchange
b. Affinity
c. Gel Filtration
d. GLC

Q.14 In solvent extraction method ---------- is not used.

a. Methanol
b. HCL
c. Ethanol
d. water

Q.15 Filtration method is used to separate ---------- molecules.

a. high molecular weight
b. Heat sensitive
c. pH sensitive
d. All of the above

Q.16 The preservation by liquid nitrogen is called as .....

a. Cryptopreservation
b. Lyophilisation
c. Freeze drying
d. Desiccation

Q.17 The full form of ATCC is ----------.

a. American Type Culture Collection Centre
b. Automatic Type Counter Collection Centre
c. American Type Counter Collection Centre
d. American Type Classifier and Collection

Q.18 ----------method is not used in isolation and screening of desired microorganism.

a. Crowded plate technique
b. Auxotrophic technique
c .Enrichment culture technique
c. Hanging drop technique

Q.19---------- method is useful for isolation and detection of organisms having the ability to produce organic acids.

a. Crowded plate technique
b. Auxotrophic technique
c. Enrichment culture technique .
d. Indicator dye technique

Q.20 ----------is the pH range of Bromophenol blue.

a.3.0 -4.6
b.8.0 -10.0
c.5.0 -8.0
d.6.4 -8.0

Q.21 Cyanide is used as a precursor for production of ----------.

a. Caretenoids
b. Vitamin B12
c. Riboflavin
d. Vitamin B2

Q.22 ---------- is absent in fermentation media.

a. Carbon
b. Nitrogen
c. Agar
d. Water

Q.23 ---------- is not a carbon source.

a. Blackstrap molasses
b. Corn molasses
c. Beet molasses
d. Yeast exract

Q24.The by-product after starch extraction from maize is ----------.

a. Blackackstap molasses
b. Soybean

c. Corn steep liquor
d. Peptones

Q.25 The basic principle of industrial microbiology is ----------.
a To provide optimum growth conditions
b To provide aseptic conditions
C To produce a pure culture
d. To create a pure form of media

Q.26 Fermentation microorganism should produce ----------yield by fermentation process.
a. High
b. Low
c. No
d. None of these

Q.27 ---------- is a downstream process.
a. Product recovery
b. Screening
c. Media formulation
d. Sterilization of media

Q.28 Alcoholic fermentation is carried out by yeast known as ----------.
a. Lactobacillus
b. Bacillus
c. Saccharomyces cerevisiae
d. E.coli

Q.29 ---------- is India"s microbial culture collection centre situated at Pune.
a. NCL
b. Ijstitute of Pasteur
c. Institute of microbial technology
d. None of these

Q.30 ---------- mutations affects only the amount of product synthesized.
a. Major
b. Minor
c . both
c. only b

FY - 27/10/23 Micro
Presenty. 28/10/2023

Roll no	Sign
7528	
7542	
7557	
7524	
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7532	
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7532	
7523	

Roll No. 7551 - 7558
Sign

Name: Sakshi Prakash Patil
Roll. No: 7539

VIVEKANAND COLLEGE, KOLHAPUR

EMPOWERED AUTONOMOUS

B.Sc. I Optional Biotechnology
Internal examination 23-24
Paper I& II
Marks-20

19/20

Q. 1 Choose the correct alternative

1. Sucrose is an example of non reducing..Disaccharide
a. Disaccharide b. Monosaccharide c. Polysaccharide d. Oligosaccharide

2. The branched chain of starch is called -Amylo pectin
a. Amylose b. amylo pectin c. amylase d. beta amylase

3. Glycine is the smallest amino acid in protein.
a. Proline b. Glycine c. aspartic acid d. glutamine

4. A disulfide bond is a covalent bond in Secondary structural level.
a. Primary b. Secondary c. Tertiary d. Quaternary

5. Myglobin contain 141 amino acid.
a. 120 b. 153 c. 141 d. 252

6. Heparin is anticoagulant.
a. Chitin b. Pectin c. Heparin d.Hyaluronic acid

7. Lactose is an example of Milk sugar.
a. Milk b. Corn starch c. Honey d. Cellulose

8. Hemoglobin is made up of 4 polypeptide chain.
a. 8 b. 6 c. 4 d. 7

9. Glycogen is storage polysaccharide in Animal
a. Plant b. Animal c. Fungi d. Algae

10. This type of Diabetes Mellitus transfer from mother to baby. - Gastational
a. Type-1 b. Type-2 c. gestational d. younset

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11. Electromagnetic spectrum contains 2 fields.

a. 2 b. 4 c. 9 d. 5

12. Visible region is 400-700 nm.

a. 200-400 b. 400-700 c. 700-900 d. 1000

13. Lenses is a light dispersion device in colorimeter.

a. Cuvette b. Lenses c. Filter d. none of these

14. Colorimeter based on Lambert's law.

a. Lambert's b. Bragg c. Watson d. Mulis

15. The light not absorbed by absorbing media is called transmitted light.

a. incident b. absorbed c. transmitted d. emitted

16. $AgNO_3$ is an example of disinfectant.

a. NaCl b. AgNO3 c. KOH d. HCl

17. Test tube with medium are sterilized by. Autoclave

a. Hot Air Oven b. Incubator c. Autoclave d. Biosafety Cabinet

18. NaCl is used to balance osmotic pressure in the medium.

a. NaCl b. Distilled water c. Peptone d. Nutrient agar

19. Pasteurization is process of. Disinfection

a. Filtration b. Disinfection c. Purification d. Centrifugation

20. for disinfection of water Chlorine halogen is used.

a. Bromine b. Chlorine c. Iodine d. Flurine

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