Vivekanand College Kolhapur (Autonomous)

Dept. of Biotechnology (Entire)

Date 21/09/2024

Notice

Hereby informed to all students of B. Sc. II Biotechnology (Entire) that there is arrangement of Internal Exam Term work for Sem.III for following subjects as follows.

Sr. No.	Name of Course / Paper	Date
1	Molecular Biology - I	23/09/2024
2	Metabolic Pathways	24/09/2024
3	Microbial Genetics	25/09/2024
4	Environmental Microbiology	26/09/2024

The nature of Internal may be Fill in the blank / one word sentence / one sentence one word/Oral (Marks for Internal -10 M)

Note:- Though the Internals are their the routine theory and practicals are conducted as per scheduled. No repetition for internal exam.

Time: 2:30 to 3:00 pm

21/09/2024

(Mr. S. G. Kulkarni)
HEAD
DEPARTMENT OF BIOTECHNOLOGY (ENTIRE)
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

PRATHAMESH CHANDRASHEKHAR SWAMI

॥ ज्ञान, विज्ञान आणि सुसंस्कार यासाठी शिक्षण प्रसार ॥
– शिक्षणमहर्षी डॉ. बापूजी साळुंखे

(अधिकारप्रदत्त स्वायत्त)
कोल्हापूर

9/10

VIVEKANAND COLLEGE, KOLHAPUR.
(Empowered Autonomous)

SUPPLIMENT

Jr. Supervisor's Sign. :	
Students Sign. :	Swami
Seat No. :	9156
Seat No. in words :	
Suppliment No. :	
	26666
Centre	Bioinstrumentation

प्र. क्र. Q. No.

Q.1] Cellulase enzyme is used to distruct bacterial cell wall

2] In salting In process solubility of protein Increases

3] In electrophoresis Ethidium bromide is an intercalting agent

4] Blenders is physical method for cell disruption

5] In electron microscope electron beam is used as a source of electron

6] Formula for resolving power is = $\frac{\lambda}{2\,NA}$ (wavelength (Numerical appe

02 Section | Q. No. | Marks

प्र. क्र. Q. No.

short Note on :-
Describe principle & working of pH meter with Neat labelled diagram.

Ans → PH metere

* Principle :-
- pH meter is used for checking acidity & alkalinity of the solution. pH metere works on the principle of potentiometry.
- Electric potential is generated with the help of two electrodes Reference electrode & glass electrode

* Diagram

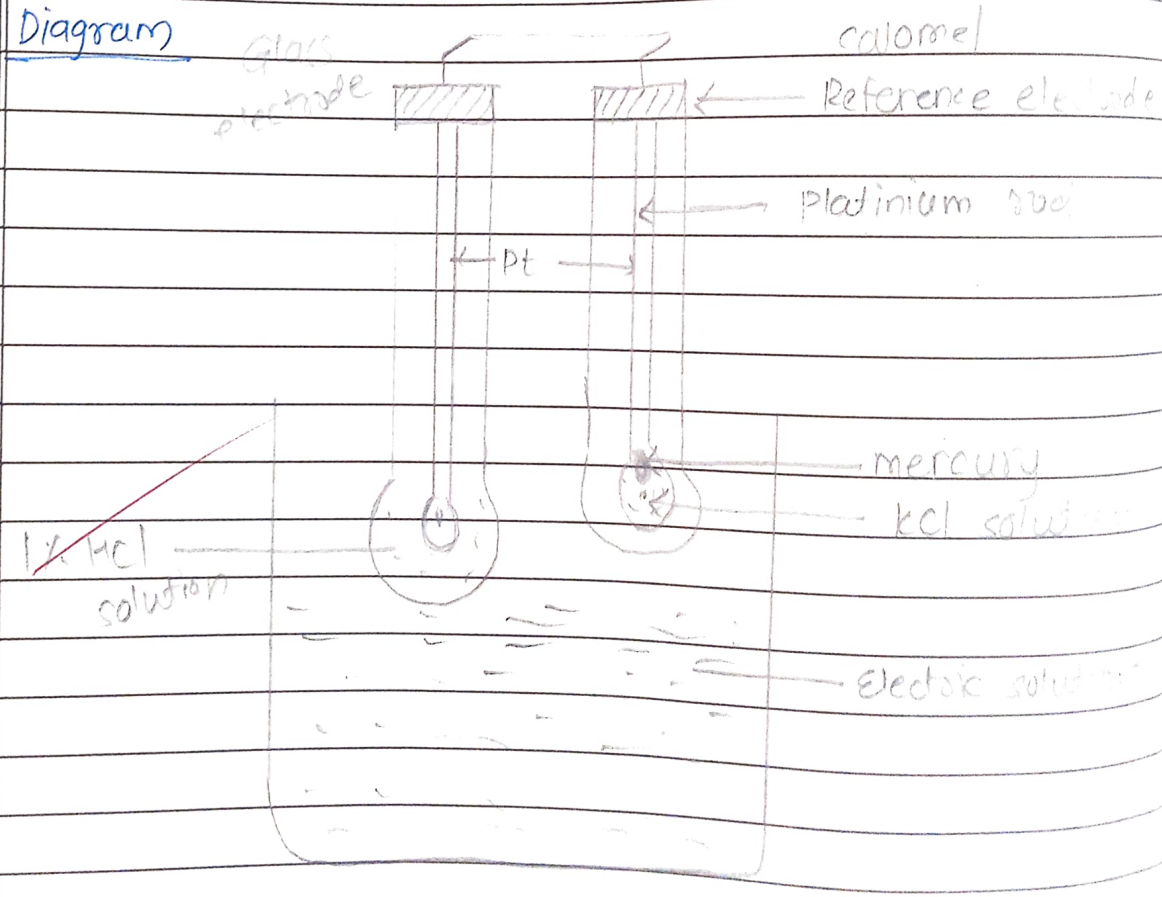

Fig. PH meter

Section | Q. No. | Marks | 03

Q. 25. Q. No.

* Working

1) PH meter works on the principle of potentiometry.
2) Glass electrodes and Reference electrode are used in this electrode PH rod is used
3) Reference electrode has mercury
4) H^+ ions are scattered to glass
5) When H^+ ions increases PH decrease so acidity increase & when alkanity increases H^+ ons decreases, PH increases

Alfiya Jafarsadik Attar Roll no. :- 3102 BSc FY Biotech Ent.
10/02/25

13/20

Biochemistry

Test 1

1. Which of the following is a characteristic of all amino acids?

a) They contain a carboxyl group and an amine group.

b) They are always positively charged at physiological pH.

c) They are classified only as essential amino acids.

d) They do not exist in zwitterionic form.

2. The side chain (R group) of which amino acid contains a sulfur atom?

a) Cysteine

b) Glycine

c) Serine

d) Tyrosine

3. Which amino acid is known for forming disulfide bonds?

a) Methionine

b) Lysine

c) Cysteine

d) Proline

4. At physiological pH (around 7.4), which form do most amino acids exist in?

a) Cationic form

b) Anionic form

c) Zwitterionic form

d) Neutral form

5. The isoelectric point (pI) of an amino acid is defined as the pH at which:

a) The amino acid has a net positive charge.

b) The amino acid has a net negative charge.

c) The amino acid has no net charge.

d) The amino acid forms a salt bridge.

6. Which of the following amino acids is classified as a basic amino acid?

a) Aspartic acid

b) Glutamic acid

c) Arginine

d) Serine

7. The backbone of an amino acid consists of:

a) An αcarbon, a carboxyl group, an amine group, and a hydrogen atom.

b) An αcarbon and a side chain only.

c) A hydroxyl group and a side chain.

d) A ketone group and a side chain.

8. Which amino acid has the simplest structure?

a) Alanine

b) Glycine

c) Serine

d) Valine

9. Which of the following properties is primarily determined by the R group of an amino acid?

a) Polarity

b) Charge

c) Size

d) All of the above

10. Which amino acid is often referred to as the "start" codon in protein synthesis?

a) Methionine

b) Tryptophan

c) Phenylalanine

d) Leucine

11. The peptide bond between two amino acids is formed through:

a) Hydrolysis

b) Condensation (dehydration) reaction

c) Redox reaction

d) Ionic bonding

12. The presence of proline in a protein sequence can disrupt:

a) αhelix formation

b) βsheet formation

c) Both a and b

d) None of the above

13. Which amino acid is known to be an imino acid?

a) Proline

b) Glycine

c) Aspartate

d) Glutamate

14. Which of the following amino acids contains an aromatic ring?

a) Alanine

b) Histidine

c) Tyrosine

d) Both b and c

15. The term "chirality" in amino acids refers to:

a) The ability of an amino acid to absorb UV light.

b) The existence of two enantiomers that are mirror images of each other.

c) The capacity of an amino acid to form hydrogen bonds.

d) The property of amino acids to ionize.

16. The pKa value of the carboxyl group in amino acids is typically around:

a) 1.0

b) 2.0

c) 4.0

d) 9.0

17. The amino acid sequence of a protein is determined by:

a) The structure of the protein.

b) The DNA sequence of the gene coding for the protein.

c) The folding of the protein.

d) The functional role of the protein.

18. Which amino acid is a precursor for the neurotransmitter serotonin?

a) Tryptophan

b) Tyrosine

c) Phenylalanine

d) Glutamate

19. The tertiary structure of a protein is primarily stabilized by:

a) Peptide bonds

b) Hydrogen bonds

c) Disulfide bridges and hydrophobic interactions

d) Ionic bonds only

20. The role of amino acids in metabolic pathways includes:

a) Serving as precursors for biosynthesis of biomolecules

b) Acting as energy sources

c) Participating in signal transduction

d) All of the above

Teertha Raj Kamal
Advances in Genetic Engineering

28/02/26
32777

Signature of Jr. Super.

(14)
(15)

(अधिकारप्रदत्त स्वायत्त)
कोल्हापूर

विवेकानंद कॉलेज, कोल्हापूर. (अधिकरप्रदत्त स्वायत्त)

परीक्षेच्या ____ या विषयाच्या प्रयोग परीक्षा

Practical Examination in, ____ Examination

at the BSc Biotech [ENT] T.Y

उमेदवाराचा आसन क्रमांक (Candidate's Seat No.) 9318 विभाग (Section)

उमेदवारांना सूचना

१. प्रश्न काळजीपूर्वक वाचा आणि त्याप्रमाणे विचारलेला प्रयोग करा.
२. उपकरणांच्या वापराबाबत तुम्हांला काही माहीत नसेल तर परीक्षक किंवा प्रयोगशाळा सहाय्यक यांना तुम्हाला मदत करण्याविषयी विनंती करा.
३. कोणताही विद्युतप्रयोग करण्यापूर्वी, प्रत्यक्ष पुरविलेली सर्व उपकरणे आणि सर्व 'कनेक्शन' नीट पाहून घेऊन संबंधित कामाची नीटनेटकी कार्ययोजना करण्याची नितांत आवश्यकता आहे आणि ह्यानंतर पुढे काम चालू करण्याविषयी परीक्षकांची परवानगी मिळविणे आवश्यक आहे.
४. सर्व निरीक्षणे कोटकबजा तक्त्यात भरावी. मधल्या सर्व गणना आणि निर्णय हे कंस तितक्या सुबाच्यपणे आणि स्पष्टपणे नोंदविलेले असणे हे हितावह आहे.
५. प्रारंभिक किंवा अंतिम निरीक्षणात संख्यावाचक आकडे एकावर एक लिहू नयेत. जर लिहिलेला कोणताही आकडा नको असेल तर त्यावर एक रेघ ओढून पाहिजे असलेला आकडा त्याच्याजवळ लिहा. प्रयोगशाळेतून बाहेर पडण्यापूर्वी आपले टेबल वांगल्या स्थितीत आहे याची खात्री करा.

INSTRUCTIONS TO CANDIDATES

1. Read the question carefully and perform the experiment as required.
2. If there by anything the apparatus that you do not know, ask the examiner or the laboratory assistant to help you.
3. Before doing any electrical experiment, it is absolutely essential that you make a neat working sketch of all apparatus actually provided and of the necessary connection and obtain the examiner's permission to proceed.
4. Express all observations in a tabular form. It is also desirable that all intermediate calculations and results should be entered as neatly and clearly as possible.
5. No numerical figures should be written over either in the preliminary or final observations. If any figure is shought to be discarded it should be run through and the desired figure written near to it.
6. Please see that your table is in good order before you leave the laboratory.

(येथून लेखनास सुरवात करा.) (Begin writing here.)

प्र. क्र. Q. No.

1) pSomII-3 plasmid is used in production of Somatostatin.
pSomI was also used earlier.

2) SiRNA interferes with expression of specific gene with compliment nucleotide sequences by degrading mRNA.
Small interfaring RNA

02 Section Q. No. Marks

प्र. क्र. Q. No.

3) Knockout mice is used to study changes in organism when a particular gene is absent.

4) When the lac Z containing vector is transformed, the bacteria produces white coloured colonies.

5) Liposomes are artificial vesicles fused with cell membrane allowing genetic material to enter cell's cytoplasm.

6) The vector used to transfer gene to produce recombinant plant is Ti plasmid

7) is the method in which a sample containing cells is suspended in a fluid & injected into flow cytometer.
→ Fluoroscent Activated cell sorter (FACS).

8) For transformation, heavy microparticles are coated with DNA to be bombarded with gene gun.
→ Gold or tungsten particles

9) carries a natural plasmid that can mostly be used in transforming plant cell only.
→ Agrobacterium Tumefaciens

प्र. क्र.
Q. No.

10) Dimethyl sulfoxide is a polycation used to increase the membrane permeability & enhance the uptake of foreign DNA
→ PEG is used also

11) Gene silencing is a technique that aims to reduce or eliminate the production of protein from it's corresponding gene.

12) The method of gene transfer that involves use of high voltage electric impulses to increase permeability of cells by creating pores is called 'Electroporation'

13) Define insertional inactivation —
→ When a foreign DNA is inserted into an existing gene, the ability of that intact DNA/gene is lost. Mo efficient than direct selec^n. Type of screening, in which 2 ger Amp^R & tet^R used. Here, we insert DNA of interest into tet^R & ability of resistance against tetracycline is lost.

14) Disadvantage of microinjection
→ 1) Requires skilled workers.
2) Only one cell at a time can be handled.

15) Steps involved in insulin production.
Isolation of gene
Restriction