

Subject Code **0214**

BIOTECHNOLOGY (Core-14)

Question Booklet No.

Signature of Invigilator	To be filled in by candidate by ball-point pen only	OMR Sl. No. _____
	Roll No. _____	_____
Time of Examination	Declaration : I have read and understood the instructions given below.	Full Marks : 80/50
Date of Examination	Full Signature of Candidate	
	Name of Candidate	

Number of Questions in the Booklet } **50/40**



UU 6th Semester Examination, 2020

INSTRUCTIONS TO CANDIDATES

- Immediately after getting the booklet read instructions carefully mentioned on the front and back page of the Question Booklet. Do not open the seals unless asked by the Invigilator.
- Write your Roll No., OMR Response Sheet No., in the specified places given above and put your signature.
- Write the subject code of the booklet in your OMR Sheet.
- Make all entries in the OMR Response Sheet as per the given instructions; otherwise OMR Response Sheet will not be evaluated.
- After opening the seals, ensure that the Question Booklet contains total no. of pages as mentioned above and printing of all the **50 / 40** questions are proper. If any discrepancy is found, inform the invigilator within **15** minutes and get the correct Question Booklet.
- For each question in the Question Booklet choose the correct option from the given four alternatives and darken the same circle in the OMR Response Sheet with Black or Blue ball-point pen.
- Darken the circle of correct answer properly; otherwise answers will not be evaluated. The candidate will be fully responsible for it.
- If more than one option is darken foe a particular question, then it will be treated as wrong answer.
- After completion of the examination, only OMR Response Sheet is to be handed over to the invigilator.

THERE IS NO NEGATIVE MARKING FOR WRONG ANSWER

BIOTECHNOLOGY(CORE-14)

(Answer any 40 questions)

- 1 Which type of DNA cleavage is done in the Maxam-Gilbert method?
 - (A) Edge
 - (B) Interstitial
 - (C) Base-specific
 - (D) Gene-specific
- 2 What is the main enzyme component of Sanger sequencing?
 - (A) Helicase
 - (B) Polymerase
 - (C) Nuclease
 - (D) Gyrase
- 3 _____ is a chemically synthesized oligonucleotide.
 - (A) Klenow fragment
 - (B) DNA
 - (C) Primer
 - (D) RNA
- 4 The hierarchical genome sequencing approach is _____.
 - (A) Entirely dissimilar to the shotgun approach
 - (B) Dissimilar to the shotgun approach
 - (C) Similar to the shotgun approach, but on a larger scale
 - (D) Similar to the shotgun approach, but on a smaller scale
- 5 Proteins can be separated with
 - (A) SDS-PAGE
 - (B) Northern blot.
 - (C) Southern blot
 - (D) PCR
- 6 The pore size of polyacrylamide gels can be modified according to the protein sizes to be analyzed. How?
 - (A) By adjusting the ratio of acrylamide to bisacrylamide.
 - (B) By adjusting the temperature during gel preparation.
 - (C) By adjusting the pH of the employed buffer.
 - (D) PCR
- 7 Gel-filtration chromatography separates on the basis of
 - (A) size and shape using porous beads packed in a column
 - (B) size using porous beads packed in a column
 - (C) shape using porous beads packed in a column
 - (D) none of the above
- 8 In a native PAGE, proteins are separated on the basis of
 - (A) net negative charge
 - (B) net charge and size
 - (C) net positive charges size
 - (D) net positive charge

- 9 Proteins are separated in an SDS-PAGE experiment on the basis of their
- (A) positively charged side chains
 - (B) molecular weight
 - (C) negatively charged side chains
 - (D) different isoelectric points
- 10 The most common secondary structure of proteins is
- (A) β -pleated sheet
 - (B) β -pleated sheet parallel
 - (C) β -pleated sheet non-parallel
 - (D) α -helix
- 11 _____ the smallest amino acid has a hydrogen atom as the R group.
- (A) valine
 - (B) proline
 - (C) Glycine
 - (D) threonine
- 12 If an intact peptide is sequenced using the Edman degradation, which step will be part of the procedure?
- (A) The Edman reagent will react with all 12 amino acids simultaneously.
 - (B) Lithium borohydride will react with an α -carboxyl group.
 - (C) Phenylisothiocyanate will react with an α -amino group.
 - (D) Strong acid will be used to cleave off one modified amino acid.
- 13 Which of the following is a Sanger's reagent?
- (A) 1-fluoro-2, 4-dinitrobenzene
 - (B) 1-fluoro-2, 3-dinitrobenzene
 - (C) 1-fluoro-2, 4-trinitrobenzene
 - (D) 1-fluoro-2, 3-trinitrobenzene
- 14 Edman degradation is used for _____
- (A) Identifying N-terminal amino acids
 - (B) Identifying C-terminal amino acids
 - (C) Identifying amino acid
 - (D) Identifying carbohydrates
- 15 In an α helix,
- (A) side chain residues point up and down the axis of the helix.
 - (B) the helix is right-handed.
 - (C) there are five residues per helical turn.
 - (D) there are usually many proline residues present.
- 16 The dideoxy method is also known as _____
- (A) Maxem and Gilbert method
 - (B) Autosequencing
 - (C) Sanger's enzymatic sequencing
 - (D) Pyrosequencing
- 17 _____ permits sequence analysis in real time.
- (A) Sanger's enzymatic sequencing
 - (B) Pyrosequencing
 - (C) Maxem and Gilbert method
 - (D) Cycle sequencing
- 18 The bond stabilizing primary structure of the a protein:
- (A) Covalent Bond
 - (B) Hydrogen Bond
 - (C) Ionic Bond
 - (D) Vander wall interaction

- 19 Mass spectrometers are used to determine which of the following?
- (A) Composition in sample
 - (B) Concentration of elements in sample
 - (C) Relative mass of atoms
 - (D) Properties of sample
- 20 Who invented mass spectrometers?
- (A) J.J Thompson
 - (B) Goldstein
 - (C) Nikola Tesla
 - (D) Aston
- 21 Mass spectrometer separates ions on the basis of which of the following?
- (A) Mass
 - (B) Charge
 - (C) Molecular weight
 - (D) Mass to charge ratio
- 22 The electrophoresis techniques that used iso-electric focusing is
- (A) SDS-PAGE
 - (B) AGE
 - (C) Native PAGE
 - (D) 2D-PAGE
- 23 Which of the following is an example of Homology and similarity tool?
- (A) BLAST
 - (B) RasMol
 - (C) EMBOSS
 - (D) PROSPECT
- 24 Proteomics refers to the study of _____.
- (A) Set of proteins in a specific region of the cell
 - (B) Biomolecules
 - (C) Set of proteins
 - (D) The entire set of expressed proteins in the cell
- 25 The information retrieval tool of NCBI GenBank is
- (A) STAG
 - (B) text Search
 - (C) Entrez
 - (D) SeqIn
- 26 The term Genomic was coined by
- (A) ThosmasCech
 - (B) T.H. Morgan
 - (C) Craig Venter
 - (D) Thomas Roder
- 27 All are genome sequencing strategies except
- (A) Edman degradation method
 - (B) Short Gun library
 - (C) Whole genome short gun sequencing
 - (D) Directed gene sequencing
- 28 Which one of the following bonds in protein has a partial double bond character?
- (A) C-O
 - (B) C-N
 - (C) C α -N
 - (D) C α -N

- 29 The isoelectric point of a protein is defined as
- (A) the pH at which the net charge on the molecule is zero
 - (B) the pH at which all groups are protonated
 - (C) the pH at which all groups are unprotonated
 - (D) the pH at which each acidic group is protonated and each basic group is unprotonated
- 30 UCSC Genome Browser hosted by which University
- (A) University of Cambridge, England
 - (B) University of California, Santa Cruz
 - (C) University of Calgary, Alberta
 - (D) University of Oxford, England
- 31 Abbreviation of NCBI is
- (A) National Center for Biology Information
 - (B) National Center for Botanical Information
 - (C) National Center for Biotechnology Information
 - (D) National Center for Genomic Information
- 32 Pyrosequencing is a method of DNA sequencing based on
- (A) Sequencing by synthesis
 - (B) Sequencing by ligation
 - (C) Sequencing by extension
 - (D) Sequencing by elongation
- 33 In Maxam-Gilbert method, the chemical used for cytosine alteration is
- (A) Piperidine
 - (B) Hydrazine
 - (C) Dimethyl sulphate
 - (D) Formic acid
- 34 ddNTP is different form dNTP in having
- (A) H in place of OH in 3 position of dNTP
 - (B) OH in place of H in 3 position of dNTP
 - (C) OH in place of H in 2 position of dNTP
 - (D) CH₃ in place of OH in 3 position of dNTP
- 35 In Maxam-Gilbert method, the chemical used for Guanine alteration is
- (A) Piperidine
 - (B) Hydrazine
 - (C) Dimethyl sulphate
 - (D) Formic acid
- 36 In SDS-PAGE, protein sample is first treated with detergent sodium dodecyl sulfate (SDS), in order to
- (A) Make the protein become negatively charged
 - (B) Make the protein become positively charged
 - (C) Renature the protein.
 - (D) Adjust the pH of protein.
- 37 Function of b-mercaptoethanol in SDS-PAGE is
- (A) To give negative charge to amino acids in the protein
 - (B) For the oxidation of disulfide bonds in the protein
 - (C) For the reduction of disulfide bonds in the protein
 - (D) For breaking hydrogen bonds in the protein

- 38 Alpha helix represents
- (A) Primary structure of a protein
 - (B) Secondary Structure of a protein
 - (C) Tertiary structure of a protein
 - (D) Aggregation of protein
- 39 The force that maintain the three dimensional structure of a protein is mainly
- (A) Non-covalent
 - (B) Covalent
 - (C) Coordinate
 - (D) Covalent and non covalent
- 40 Proteins may be separated according to size by
- (A) Reverse phase Chromatography
 - (B) Ion exchange chromatography
 - (C) Isoelectric focusing
 - (D) Molecular exclusion Chromatography
- 41 In which of the following years, a proposal for sequencing of human genome was prepared?
- (A) 1980
 - (B) 1988
 - (C) 1986
 - (D) 1990
- 42 Automated sequencing is defined as _____
- (A) Chain termination sequencing
 - (B) Radio labeled sequencing
 - (C) Real time fluorescence sequencing
 - (D) Pyrosequencing
- 43 β -pleated sheets are the examples of _____
- (A) Primary structure
 - (B) Secondary structure
 - (C) Tertiary structure
 - (D) Quaternary structure
- 44 The primary structure of protein represents
- (A) Linear sequence of amino acids joined by peptide bond
 - (B) 3-dimensional structure of protein
 - (C) helical structure of protein
 - (D) sub unit structure of protein
- 45 Haemoglobin has
- (A) Primary structure
 - (B) Secondary structure
 - (C) Tertiary structure
 - (D) Quaternary structure
- 46 Disulphide bonds are formed between
- (A) Cysteine residues that are close together
 - (B) Cysteine residues that are close together
 - (C) Proline residues that are close together
 - (D) Histidine residues that are close together
- 47 which amino acid residue is most likely to be found in the interior of a water soluble globular protein
- (A) Ser
 - (B) Arg
 - (C) Val
 - (D) Asp

- 48 In case of pyrosequencing unincorporated nucleotides and ATP are degraded by the enzyme
- (A) Alkaline phosphatase
 - (B) Apyrase
 - (C) ATP sulfurylase
 - (D) DNA polymerase
- 49 The first genome sequenced by shotgun sequencing was that of
- (A) Cauliflower mosaic virus
 - (B) SV40 Virus
 - (C) Retro Virus
 - (D) M13 Phage
- 50 ClastalW
- (A) Protein secondary structure predicting tool
 - (B) Nucleic acid sequence analysis tool
 - (C) Multiple sequence alignment tool
 - (D) Data retrieving tool