



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science (Honours) in Biotechnology

Course Name – Genomics and Proteomics

Course Code - BBTC602

(Semester VI)

Time allotted : 1 Hrs.15 Min.

Full Marks : 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

Choose the correct alternative from the following :

- (1) Genome refers

a) Total gene pool of an organism	b) Total mRNA of an organism
c) Only DNA of a diploid cell	d) Only proteins
- (2) Name the phenomenon which shows the lack of correlation in genome size and genetic complexity.

a) Histogram	b) Karyogram
c) Dendrogram	d) C-value paradox
- (3) The most important tools of genomics are

a) Microarray and informatics	b) Microarray and BLAST
c) BLAST and FASTA	d) FASTA and PCR
- (4) Bioinformatics involves

a) Artificial intelligence	b) Only knowledge of Biochemistry
c) Zoological knowledge	d) All of these
- (5) A character or trait is the direct function of

a) Gene	b) RNA
c) Protein	d) rRNA
- (6) What is the genome size of yeast?

a) 12 Mb	b) 120 Mb
c) 330 Mb	d) 1000 Mb
- (7) Human has a _____ genome.

a) About 100 kb	b) About 500 kb
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- c) About 1000 kb
d) About 3000 kb
- (8) Introns are
a) Non coding regions of genome
b) Coding regions of genome
c) Repetitive regions of genome
d) All of these
- (9) The largest genome is belonging from which organism?
a) E. coli
b) Homo sapiens
c) T4
d) Carsonella ruddii
- (10) The smallest genome is belonging from which organism?
a) E. coli
b) Homo sapiens
c) T5
d) Carsonella ruddii
- (11) Sanger used which of the following chemical to sequence a DNA molecule?
a) ddNTP
b) dNTP
c) Base modifiers
d) Base analogues
- (12) A ddNTP devoids OH group at _____
a) 2' Carbon of ribose sugar
b) 3' Carbon of ribose sugar
c) 4' Carbon of ribose sugar
d) 5' Carbon of ribose sugar
- (13) The first significant DNA sequence to be obtained was that of _____
a) Lambda
b) Plasmid
c) Lactose
d) Mammals
- (14) What is the main enzyme used in Sanger method?
a) Nuclease
b) Polymerase
c) Gyrase
d) None of these
- (15) A sequencing gel is a _____
a) High resolution gel
b) Low resolution gel
c) High polymerised gel
d) Toxic gel
- (16) Most common enzyme(s) used in pyrosequencing is/are
a) Luciferase and DNA Pol I
b) Sulfurylase and luciferase
c) Sulfurylase only
d) All of these
- (17) Which of the following techniques is used to immobilize/amplify a ssDNA primer binding region (known as an adapter) which has been conjugated to the target sequence (i.e. the sequence that is to be sequenced) on a bead.
a) Emulsion PCR
b) Nested PCR
c) Hot-start PCR
d) All of these
- (18) The first bacterial genome to be sequenced was that of _____ a mild human pathogen.
a) Hemophilus influenzae
b) Lactobacillus
c) Vibrio cholerae
d) Clostridium botulinum
- (19) Which of the given is wrongly matched?
a) Escherichia coli – Bacteria
b) Methanococcus jannaschii – Archaea
c) Synechocystis sp. – Archaea
d) Aquifex aeolicus – Bacteria
- (20) Which of the following is incorrect regarding gene annotation?
a) The gene annotation of the human genome employs a combination of theoretical prediction and experimental verification
b) Gene structures are first predicted by ab initio exon prediction programs

- c) The predicted genes are compared with experimentally determined cDNA and EST sequences
- d) The pairwise alignment programs are not involved
- (21) A minimal constitutes genome, which is a _____ set of genes required for maintaining a free living cellular organism.
- a) maximum
b) maximal
c) highest number of set of
d) minimal
- (22) BLAT is
- a) Basic local alignment search tool
b) BLAST like alignment tool
c) BLAST and FASTA tool
d) None of these
- (23) Ensembl has the accession to annotate mainly
- a) Ptimate genome
b) Vertibrate genome
c) Human genome
d) Mammals genome
- (24) Pyrosequencing was developed for the first time by _____
- a) Celera Genomics
b) 454 Life sciences
c) Roche
d) Sanger
- (25) Which one of the following is not using any flourescent or camera scanning techniques?
- a) Ion torrent sequencing
b) Pyrosequencing
c) SoliD sequencing
d) None of these
- (26) If you want to search for a non-chordate gene sequence, you should NOT search in _____
- a) EMBL
b) DDBJ
c) NCBI
d) Ensembl
- (27) Every protein in its native state has a unique three dimensional structure which is referred to as its _____
- a) Configuration
b) Conformation
c) Spatial arrangement of domains
d) None of these
- (28) How many orders are possible for a conventional protein folding?
- a) 1
b) 2
c) 3
d) 4
- (29) In ion torrent semi conductor sequencing method, which one of the following ions are detected?
- a) Mg²⁺
b) H⁺
c) Cl⁻
d) Ca²⁺
- (30) Name the enzyme that is waidely used for MS analysis
- a) Pepsin
b) Trypsin
c) Peptidase
d) All of these
- (31) In Mass spectrometric analysis, which one of the following is used for sequencing data?
- a) Mass of the peptide
b) Charge of the peptide
c) m/z value of the peptide
d) z/m value of the peptide
- (32) Peptide bond has _____ nature.
- a) Partial triple bond
b) Partial double bond
c) Single bond
d) Double bond
- (33) Which of the following scientists created the first Bioinformatics database?

- a) Dayhoff
c) Richard Durbin
- b) Pearson
d) Michael.J.Dunn
- (34) The identification of drugs through the genomic study is called _____.
- a) Genomics
c) Pharmacogenetics
- b) Pharmacogenomics
d) Cheminformatics
- (35) The process of finding the relative location of genes on a chromosome is called _____.
- a) Gene tracking
c) Genome mapping
- b) Genome walking
d) Chromosome walking
- (36) The computational methodology that tries to find the best matching between two molecules, a receptor and ligand are called _____.
- a) Molecular fitting
c) Molecular docking
- b) Molecular matching
d) Molecule affinity checking
- (37) The stepwise method for solving problems in computer science is called _____.
- a) Flowchart
c) Procedure
- b) Algorithm
d) Sequential design
- (38) What is the most challenging issue facing genome sequencing?
- a) The inability to develop fast and accurate sequencing techniques
c) The availability and stability of DNA
- b) The ethics of using information from genomes at the individual level
d) All of these
- (39) Genomics can be used in agriculture to:
- a) Generate new hybrid strains
c) Improve yield
- b) Improve disease resistance
d) All of these
- (40) Which of the following is an example of model organism?
- a) *Mangifera indica*
c) *Cocos nucifera*
- b) *Arabidopsis thaliana*
d) *Porteresia coarctata*
- (41) *Arabidopsis* has ____ no. of chromosomes in haploid cell.
- a) 4
c) 6
- b) 5
d) 7
- (42) Model of alpha helix was proposed by _____
- a) Watson
c) Krebs
- b) Linus Pauling
d) Moorey
- (43) Which of the following factors is not responsible for the denaturation of proteins?
- a) Heat
c) pH change
- b) Charge
d) Organic solvents
- (44) What is the average molecular weight of an amino acid residue in a protein?
- a) 110
c) 130
- b) 120
d) 140
- (45) Which of the following proteins was first sequenced by Frederick Sanger?
- a) Myosin
c) Myoglobin
- b) Insulin
d) Haemoglobin
- (46) What is a bond between amino acids called?

- a) Ionic bond
c) Peptide bond
- b) Acidic bond
d) Hydrogen bond
- (47) Which of the following disorders is caused by the deficiency of proteins?
a) Weight loss
c) Loss in muscle strength
- b) Muscle fatigue
d) All of these
- (48) Which of the following cell organelles is involved in the process of protein synthesis?
a) Vesicles
c) Synchrotrons
- b) Ribosomes
d) Chaperons
- (49) Which of the following is not the function of proteins?
a) Helps in digesting food
c) Fights against the invading pathogens
- b) Carries genetic information
d) Helps in transporting oxygen in the blood
- (50) The process of protein synthesis takes place in which of the following cell organelles?
a) Nucleus
c) Vacuoles
- b) Mitochondria
d) Cytoplasm
- (51) A linear polymer of more than fifty amino acid residues is referred to as a _____
a) dipeptide
c) polypeptide
- b) oligopeptide
d) peptide
- (52) In mass spectrometer, the sample that has to be analysed is bombarded with which of the following?
a) Protons
c) Neutrons
- b) Electrons
d) All of these
- (53) Mass spectrometer separates ions on the basis of which of the following?
a) Mass
c) Molecular weight
- b) Charge
d) Mass to charge ratio
- (54) In mass spectrometer, the ions are sorted out in which of the following ways?
a) By accelerating them through electric field
c) By accelerating them through electric and magnetic field
- b) By accelerating them through magnetic field
d) By applying a high voltage
- (55) In MALDI-TOF, which of the following is used as matrix?
a) Alpha hydro-Glycolic acid
c) Benzoic acid
- b) 3,5-dimethoxy-4-hydroxycinnamic acid
d) 4,5,6 trimethoxy-4-hydroxycinnamic acid
- (56) Which mass analyzer is most frequently used with MALDI?
a) Magnetic sector
c) Ion trap
- b) Quadrupole
d) TOF
- (57) Which of the following cannot be used as a MALDI matrix compound?
a) Alpha-Cyano-4-hydroxycinnamic acid
c) 3-Hydroxypicolinic acid
- b) Sinapinic acid
d) 2,3-Dihydroxybenzoic acid
- (58) Which of the following is a Sanger's reagent?
a) 1-fluoro-2, 4-dinitrobenzene
c) 1-fluoro-2, 4-trinitrobenzene
- b) 1-fluoro-2, 3-dinitrobenzene
d) 1-fluoro-2, 3-trinitrobenzene
- (59) Which of the following compound is not involved in Edman degradation?
a) Phenylisothiocyanate
- b) CF₃ COOH

c) FDNB

d) Phenylthiocarbonyl

(60) Which of the following is Edman reagent?

a) Phenylisothiocyanate

b) CF_3COOH

c) FDNB

d) Phenylthiocarbonyl