



## BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Master of Science in Biotechnology

Course Name – Genetic Engineering & Recombinant DNA Technology

Course Code - MBT203

( Semester II )

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) DNA synthesis prokaryotes is
 

a) unidirectional	b) bidirectional
c) nondirectional	d) Multidirectional
- (2) Replication occurs once every cell generation during
 

a) S phase	b) T phase
c) C phase	d) A phase
- (3) Which of the following options, A – D, are the pyrimidine bases found in DNA?
 

a) uracil and thymine	b) thymine and cytosine
c) adenine and thymine	d) cytosine and Uracil
- (4) Semi-conservative DNA replication was first demonstrated in
 

a) Drosophila melanogaster	b) Escherichia coli
c) Streptococcus pneumoniae	d) Drosophila melanogaster
- (5) Round structures of Deoxyribonucleic Acid (DNA) around histone proteins are called
 

a) Mono hybrid genes	b) Hybrid genes
c) Chromosomes	d) Nucleosomes
- (6) Process in which sequence of nucleotides of DNA is copied in form of mRNA nucleotides is called
 

a) Denomination	b) Translation
c) Segregation	d) Transcription
- (7) Process in which ribosome reads sequence carried by mRNA and joins amino acids to form protein is called
 

a) Denomination	b) Translation
c) Segregation	d) Transcription
- (8) Pick the right difference between a DNA and RNA

- a) Sugar and phosphate  
c) Sugar and pyrimidines
- b) Purines and phosphate  
d) Sugar and purines
- (9) Hershey and Chase experiment proving DNA as the genetic material was based on the principle
- a) Transduction  
c) transcription
- b) transformation  
d) translation
- (10) A bacterial colony containing DNA made up of 100% N<sup>15</sup> nitrogen bases is allowed to replicate in a medium containing N<sup>14</sup> bases. After one round of replication the result would be
- a) All individuals will be identical to parents  
c) Only 50% individuals would be hybrids
- b) All individuals will be hybrids  
d) All individuals would have DNA made up of 100% N<sup>14</sup>
- (11) At the physiological pH, the DNA molecules are;
- a) Positively charged  
c) Amphipathic
- b) Negatively charged  
d) Neutral
- (12) Eukaryotes differ from prokaryote in mechanism of DNA replication due to
- a) Use of DNA primer rather than RNA primer  
c) Discontinuous rather than semi-discontinuous replication
- b) Different enzyme for synthesis of lagging and leading strand  
d) Unidirectional rather than semi-discontinuous replication
- (13) Which of the following is TRUE for the RNA polymerase activity?
- a) DNA dependent DNA synthesis  
c) DNA dependent RNA synthesis
- b) Direct repair  
d) RNA dependent RNA synthesis
- (14) The DNA chain acting as template for RNA synthesis has the following order of bases, AGCTTCGA. What will be the order of bases in mRNA?
- a) TCGAAGCT  
c) TCGAUCGU
- b) UGCUAGCT  
d) UCGAAGCU
- (15) EcoRI has restriction site of sequence
- a) 5'GAATTC3  
c) 5'CAATTG3
- b) 5'ATTAAT3'  
d) 5'TAATTC3
- (16) Which of the following enzymes in bacteria are responsible for restricting the growth of viruses?
- a) Restriction endonuclease  
c) Lipase
- b) Gyrase  
d) Exonuclease
- (17) Which enzyme is used to join together two different types of DNA molecules?
- a) Ligase  
c) Protease
- b) Nuclease  
d) Phosphatase
- (18) Recombinant plasmids are added to a bacterial culture that has been pre-treated with \_\_\_\_\_ ions.
- a) Ferrous  
c) Magnesium
- b) Iodine  
d) calcium
- (19) Taq polymerase is a----- polymerase.
- a) Heat stable  
c) Buffering
- b) Heat labile  
d) Large
- (20) cDNA libraries are produced from
- a) rRNAs  
c) mRNAs
- b) tRNAs  
d) cDNAs



- c) Proteins  
 (34) In southern blotting \_\_\_\_\_ is present in the reservoir.  
 a) DNA  
 c) Gel  
 (35) Which membranes have greater binding capacity than nitrocellulose membranes?  
 a) Sucrose  
 c) Nylon  
 (36) Which of the following is not the core subunit of the octamer histone protein?  
 a) H1  
 c) H2B  
 (37) Which of the following is not the cloning vector utilized in recombinant DNA technology?  
 a) Plasmid  
 c) Bacterial Artificial Chromosomes  
 (38) Which of the following term is not true regarding restriction enzymes used in recombinant DNA technology?  
 a) They are site-specific  
 c) They are ATP dependent nucleases  
 (39) Which of the following libraries provides information about functional genomics?  
 a) DNA library  
 c) RNA library  
 (40) Which of the following DNA technology is used for the amplification of DNA in vitro?  
 a) Polymerase Chain Reaction  
 c) Northern blot  
 (41) The blotting technique which is used to detect the RNA in a sample is.....  
 a) Southern blotting  
 c) Northern blotting  
 (42) Plasmids and \_\_\_\_\_ have the ability to replicate within bacterial cells independent of the control of chromosomal DNA.  
 a) bacteriophages  
 c) bacteria  
 (43) The sequence of DNA from where replication starts is called \_\_\_\_\_.  
 a) selectable marker  
 c) ter sequence  
 (44) Viruses which infect bacteria are called \_\_\_\_\_.  
 a) bacteria  
 c) pUC  
 (45) What helps in identifying the successful transformants?  
 a) Ori  
 c) Selectable markers  
 (46) Selectable markers are the genes which code for resistance to \_\_\_\_\_.  
 a) disease  
 c) antibiotics  
 (47) The process by which a foreign DNA is introduced into bacteria is called \_\_\_\_\_
- d) E. coli  
 b) Buffer  
 d) Agarose  
 b) Agarose  
 d) Teflon  
 b) H2A  
 d) H3  
 b) Cosmids  
 d) Yeast Intact chromosomes  
 b) They recognize palindromic sequences  
 d) They are endonucleases  
 b) cDNA library  
 d) Protein library  
 b) Restriction Analysis  
 d) Southern blot  
 b) Eastern blotting  
 d) Western blotting  
 b) fragments  
 d) clones  
 b) origin of replication  
 d) genetic sequence  
 b) archaea  
 d) bacteriophages  
 b) Viruses  
 d) Enzymes  
 b) phages  
 d) foreign entity

- a) amplification  
c) infection
- b) transformation  
d) digestion
- (48) Insertion of recombinant DNA within the gene encoding for  $\beta$ -galactosidase leads to \_\_\_\_\_
- a) amplification  
c) insertional inactivation
- b) transformation  
d) cloning
- (49) Which organism can transfer 'T-DNA' within plants?
- a) *Agrobacterium tumifaciens*  
c) *Aspergillus niger*
- b) *E. coli*  
d) *S. typhi*
- (50) Which plasmid of *Agrobacterium tumifaciens* leads to tumor formation in dicots?
- a) F plasmid  
c) pUC
- b) Ti  
d) pBR
- (51) How can we separate DNA fragments in respect to size?
- a) Agarose gel electrophoresis  
c) Size exclusion chromatography
- b) SDS-PAGE  
d) Ion-exchange chromatography
- (52) In the following type of libraries pick the odd one out.
- a) A DNA library  
c) c DNA library
- b) B DNA library  
d) Z DNA library
- (53) Blunt ended DNA is join together by
- a) Adapter  
c) Self replicative process
- b) Linker  
d) by using enzyme Terminal transferase
- (54) What is a probe?
- a) Chemically synthesized DNA  
c) Fragmented DNA duplex
- b) Purified DNA  
d) Either purified or synthesized single stranded DNA
- (55) Why is a probe labeled?
- a) Improve visibility  
c) Improve location identification
- b) Improve stability  
d) Improve binding capability
- (56) During blotting denaturation of the double stranded DNA is brought about by \_\_\_\_\_
- a) Application of current  
c) Treatment with EtBr
- b) Treatment with alkali  
d) none of the above
- (57) Northern blotting is performed for \_\_\_\_\_
- a) Determining the size of DNA  
c) Quantification of RNA
- b) Determining the size of RNA  
d) Sequencing of RNA
- (58) Restriction enzymes are analogous to what common school supply?
- a) glue  
c) paper
- b) scissors  
d) highlighter
- (59) The site where restriction enzymes cut are a called:
- a) cut sites  
c) recognition sites
- b) restriction sites  
d) cleave sites
- (60) What is a plasmid?
- a) a section of the human genome  
c) viral DNA
- b) a material that cuts DNA  
d) an accessory piece of DNA found in bacteria