



BRAINWARE UNIVERSITY

Term End Examination 2019 – 20

Programme – Master of Science in Microbiology

Course Name – Cell & Molecular Biotechnology

Course Code – MMB105

(Semester – 1)

Time allotted: 2 Hours 30 Minutes

Full Marks: 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Question)

20 x 1 = 20

1. Answer any *twenty* from the following
 - (i) During DNA staining chromosome get stained with

a. Eosin	b. Borax carmine
c. Acetocarmine	d. Safranin
 - (ii) Which bonds are broken during DNA replication?

a. hydrogen bonds between bases	b. phosphodiester bonds
c. covalent bonds between bases	d. ionic bonds between bases and phosphate groups
 - (iii) Suppose 30% of the bases in a DNA molecule are adenine, what % of the bases are guanine?

a. 20%	b. 30%
c. 35%	d. 70%
 - (iv) DNA synthesis occurs in

a. Unidirectional	b. Bidirectional
c. Nondirectional	d. Multidirectional
 - (v) Generally the beta subunit of polymerase plays role in

a. Promoter binding	b. Elongation
c. Cation binding	d. Termination

- (xv) Scientists Hershey and Chase showed DNA as the genetic material was based on the principle
- Transduction
 - Transformation
 - Transcription
 - Translation
- (xvi) The word 'Cistron' refers
- The coding sequence of DNA
 - The functional unit of DNA molecule that codes for a particular gene product
 - Intervening non coding sequence of DNA
 - The sequences which are removed during RNA splicing.
- (xvii) Removal of _____ enzyme affects the synthesis of hnRNA in eukaryotes
- RNA polymerase II
 - RNA primase
 - RNA polymerase III
 - RNA polymerase I
- (xviii) Which of the following mRNAs will be translated to a polypeptide chain containing eight amino acids.
- AUGUUAUAGACGAGUAGCG
ACGAUGU
 - AUGAGACGGACUGCAUUCCC
AACCUGA
 - AUGCCCAACCGUUAUUCAUG
CUAG
 - AUGUCGACAGUCUAAAACAG
CGGG
- (xix) The stretch of codon between the AUG and a stop codon is called
- Open reading frame
 - TATA box
 - Colinearity
 - Degenerate
- (xx) In which year scientist Fleming received the Noble prize?
- 1945
 - 1947
 - 1942
 - 1944
- (xxi) In a one turn of DNA, the number of base pair is
- 4
 - 6
 - 8
 - 10
- (xxii) Amplification of rRNA-ITS genes required
- Only forward primer
 - Both forward & reverse primer
 - Only reverse primer
 - All of these
- (xxiii) pBR322 is the example of
- HAC
 - YAC
 - Plasmid vector
 - None of these

- (xxiv) In molecular biology SSR DNA marker are
- | | |
|--------------------|--------------------|
| a. Micro satellite | b. Macro satellite |
| c. Both a & b | d. None of these |
- (xxv) The two strands of DNA are held together by
- | | |
|-------------|-----------|
| a. Nitrogen | b. Oxygen |
| c. Hydrogen | d. Carbon |

Group – B

(Short Answer Type Questions)

4 x 5 = 20

Answer any *four* from the following

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|----|---|---|
| 2. | Explain the role of protein kinase in cell cycle. | 5 |
| 3. | (a) What is oncogene? | 1 |
| | (b) How malignant tumor develop? | 4 |
| 4. | (a) Define positive regulators and negative regulators. | 2 |
| | (b) Briefly describe RNAi technology. | 3 |
| 5. | (a) How cDNA is formed? | 4 |
| | (b) Write the full form of AFLP | 1 |
| 6. | (a) What is Biochips? | 1 |
| | (b) Write the basic differences of DNA & protein chips. | 4 |
| 7. | Explain the importance of recombinant DNA technology. | 5 |

Group – C

(Long Answer Type Questions)

2 x 10 = 20

Answer any *two* from the following

- | | | | |
|-----|-----|--|-----|
| 8. | (a) | Explain the steps of DNA sequence alignment using NCBI tools. | 7 |
| | (b) | What are the importance of phylogenetic tree construction? | 3 |
| 9. | (a) | Write in details the importance of recombinant DNA technology. | 8 |
| | (b) | What is 'MAS'? | 2 |
| 10. | (a) | Explain the procedure to be followed during 'Gene therapy'. | 8 |
| | (b) | What are basic difference between chemical drug Vs Gene therapy? | 2 |
| 11. | (a) | Write the full form of PCR in molecular biology? | 1 |
| | (b) | Write its applications. | 3+2 |
| | (c) | Write in detail the protocol of 50 μ l PCR with 35 cycles. | 4 |
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