BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Sc.(MB)-2024
Course Name – Microbial Genetics and Biostatistics
Course Code - MMB20206
(Semester II)

Full Marks : 60 **Time : 2:30 Hours**

[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)

1. *Choose the correct alternative from the following :* 1 x 15=15

(i) Identify types of histones are present in Eukaryotes.
a) 4 b) 3
c) 6 d) 5

(ii) Genome of bacterium is present in
a) Nucleus b) Nucleolus
c) Nuclrear Matrix d) Nucleoid

(iii) What are coding regions of the genes called?
a) Exons b) Introns
c) Cistrons d) Intregrons

(iv) DNA is associated with which of the following in prokaryotes.
a) Cohesins b) Histone like proteins
c) Condensins d) Histones

(v) What is the length of an E.coli genome?
a) 1 mm b) 1.7 mm
c) 1.9 mm d) 2 mm

(vi) Select the size of the genome a yeast cell.
a) 10 Mbp b) 18 Mbp
c) 12 Mbp d) 14 Mbp

(vii) Select the following that represents the total DNA content of an organism.
a) Z value b) C value
c) D value d) B value

(viii) Histones are rich in _____ amino acids.

a) Leucine
b) Lysine
c) Glutamic acid
d) Histidine

(ix) Select the semi autonomous organelle.

a) Ribosome
b) Peroxisome
c) Chloroplast
d) Endoplasmic Reticulum

(x) Select the mobile genetic elements

a) Exons
b) Introns
c) Cistrons
d) Transposons

(xi) How many types of Col plasmids are found in E.coli?

a) 4
b) 5
c) 2
d) 3

(xii) Which of the following generates Thymine dimers to cause mutation?

a) Cosmic rays
b) Ethidium Bromide
c) X rays
d) UV rays

(xiii) Select the one that is a base analogue.

a) 5 Bromo uracil
b) Hydroxy Methyl Cytosine
c) Etidium Bromide
d) Hydroxy Guanine

(xiv) Wobble position means

a) Base paring
b) Altered base on code
c) Third altered base on codon
d) None of these

(xv) The complete ribosome contains on the mRNA

a) P site
b) A site
c) Both P site & A site
d) None of these

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Breifly describe the process of okazaki fragments formation. (3)
3. Describe the mechanism of homologous recombination (3)
4. Describe types of bacterial transposons. (3)
5. Differentiate F and R plasmids. (3)
6. Justify nonsense mutation in comparison to missense mutation. (3)

OR

Illustrate the difference between a bar chart and a histogram with an example. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain DNA denaturation and renaturation. How can you represent the DNA reassociation kinetics (5)
8. Define bacterial recombination. Explain the molecular mechanism behind it. (5)
9. Differentiate F, R, and Col Plasmids. (5)
10. Illustrate the detailed structure of DNA with a suitable diagram (5)
11. Describe the mechanism of homologous recombination. (5)
12. Illustrate DNA reassociation kinetics. (5)

OR

Illustrate the difference between prokaryotic and eukaryotic genome. (5)