N. A

BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Sc.(MLT)-2020
Course Name – Genetics & Molecular Biology
Course Code - BMLT602
(Semester VI)

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 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the function of histone.
a) It helps in DNA replication
b) It helps in stabilizing RNA
c) It helps in stabilizing DNA
d) It activated DNA during replication

(ii) Name the first cloned mammal in the world.
a) Bolly
b) Tolly
c) Holly
d) Dolly

(iii) Select the first and the most important step in the polymerase chain reaction.
a) Primer extension
b) Annealing
c) Denaturation
d) None of these

(iv) Select the option which is not a type of thalassemia.
a) α-thalassemia
b) β-thalassemia
c) γ-thalassemia
d) minor thalassemia

(v) Select the correct option: Western blot is used for detection of
a) DNA in a sample
b) RNA in a sample
c) Protein in a sample
d) Glycolipid in a sample

(vi) Identify the palindromic DNA sequence.
a) AGTCCTGA
b) GTTCCAAG
c) ATTGCAAT
d) GTTGGAAC

(vii) Select the main cause of down syndrome.
a) Trisomy of 21st chromosome
b) Tetrasomy of 21st chromosome
c) Trisomy of 22nd chromosome
d) Tetrasomy of 22nd chromosome

(viii) Choose the enzyme responsible for photoactivation of DNA.
a) Photoligase
b) Photoreductase
c) Photolyase
d) Photooxidase

(ix) Interpret the result: A homozygous tall plant is crossed with a homozygous dwarf plant. At the F1 generation, all the plants are dwarf.

a) The dwarf characteristics is dominant over tall.
b) The tall characteristics is dominant over dwarf.
c) The dwarf characteristics is recessive over tall.
d) Both characteristics are co-dominant.

(x) A white-furred rabbit breeds with a black-furred rabbit and all of their offspring have a phenotype of gray fur. Predict the reason of this incidence of fur color.

a) Co-dominance
b) Incomplete dominance
c) Dominance-recessive
d) Complete dominance

(xi) Select the incorrect option regarding the sex determination in human.

a) It is determined by X and Y chromosome.
b) Females produce only X chromosome
c) Males produce only Y chromosome.
d) Gametes receive sex chromosomes from both of the parents.

(xii) Give example of a codominance and multiple allele type of gene interaction.

a) Flower colour
b) Blood group
c) Plant height
d) Ear hair

(xiii) Select the name of the terminal DNA sequence.

a) Sarcomere
b) DNAse
c) Telomere
d) Ligase

(xiv) Identify the name of enzyme used in the unwinding of DNA during DNA replication.

a) Ligase
b) Helicase
c) Exonuclease
d) All of these

(xv) Identify the nucleotides present in DNA.

a) Adenine, Uracil, Guanine and Cytosine
b) Thymine, Uracil, Guanine and Cytosine
c) Adenine, Thymine, Guanine and Cytosine
d) Thymine, Uracil, Adenine and Cytosine

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Mitochondrial DNAs are derived from mother only. Explain this statement. (3)
3. Describe the principles of polymerase chain reaction. (3)
4. For diagnosis of COVID19, RT-PCR is important. State its importance in diagnosis. (3)
5. Discuss about DNA fingerprinting. (3)
6. Evaluate the role of genetic testing on forensic laboratory. (3)

OR

Differentiate between genome and proteome. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Illustrate the process of cell cycle with a proper diagram. (5)
8. Justify the statement: Primers are essential in PCR. (5)
9. Explain the role of restriction enzyme in recombinant DNA technology. (5)
10. Write a short note on hemophilia. (5)
11. Justify the statement: Most of the genetic disorders are recessive. (5)
12. Sickle cell anemia is an autosomal recessive disorder- explain this statement. (5)

OR

Minor thalassemia is not detrimental for an individual: explain the statement. (5)

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