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BRAINWARE UNIVERSITY

Term End Examination 2023

Programme – B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021

Course Name – Molecular Biology

Course Code - BBTC401

(Semester IV)

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) The name of regulation of a lac operon by a repressor known as
 - a) Neutral regulation
 - b) Positive regulation
 - c) Mixed regulation
 - d) Negative regulation
- (ii) An alteration in a nucleotide sequence that changes a triplet coding for an amino acid into a termination codon is
 - a) Nonsense mutation
 - b) Mutagenesis
 - c) Mutation
 - d) Mutagen
- (iii) The process of removal of introns and joining of exons called
 - a) Capping
 - b) Tailing
 - c) Termination
 - d) Splicing
- (iv) The enzyme photolyase is used in what method of repair?
 - a) Base excision
 - b) Photo reactivation
 - c) Nucleotide excision
 - d) None of these
- (v) Choose the name of a donor for the methyl group in methylation of proteins
 - a) Methionine
 - b) Methane
 - c) O-adenosyl methionine
 - d) S-adenosyl methionine
- (vi) Which of the following is TRUE for the RNA polymerase activity?
 - a) DNA dependent DNA synthesis
 - b) Direct repair
 - c) DNA dependent RNA synthesis
 - d) RNA dependent RNA synthesis
- (vii) Denaturation of DNA molecule can be studied by measuring its absorbance at a wave length
 - a) 260 nm
 - b) 560 nm
 - c) 470 nm
 - d) 570 nm
- (viii) What is the work of the sigma factor in transcription?
 - a) Helicase action
 - b) Transcription initiation
 - c) Transcription elongation
 - d) Transcription termination

- (ix) Which of the following transcription termination technique has RNA dependent ATPase activity?
- a) Intercalating agents
b) Rho dependent
c) Rho independent
d) Rifampicin
- (x) Which one of the following chemicals is a DNA intercalator?
- a) 5- Bromouracil
b) Acridine Orange
c) UV
d) Ethyl methane sulfonate
- (xi) The presence and distribution of specific mRNAs within the cell can be detected by
- a) Northern blot analysis
b) RNAase protection assay
c) In situ hybridisation
d) Real-time PCR
- (xii) What is the main function of tRNA in relation to protein synthesis?
- a) Inhibits protein synthesis
b) Proof reading
c) Identifies amino acids and transport them to ribosomes
d) all of these
- (xiii) What is the final factor in eukaryotes that releases the peptide and ribosome?
- a) eRRF
b) EF2
c) RF3
d) RF4
- (xiv) Which of the following is NOT a DNA repair mechanism?
- a) Binding-protein excision repair
b) Mismatch repair
c) Base excision repair
d) Nucleotide excision repair
- (xv) Example of a palindromic sequence is
- a) AGTCCTGA
b) GTTCCAAG
c) ATTGCAAT
d) GTTGGAAC

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Illustrate nucleotide excision repair. (3)
3. Explain the function of ligase and topoisomerase enzyme. (3)
4. Describe the Structure and function of of t-RNA (3)
5. Describe the role of telomere and telomerase in the replication. (3)
6. Differentiate between DNA and RNA polymerase (3)

OR

Explain Wobble hypothesis (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. How peptide bonds are formed in translation? (5)
8. Explain the mechanism of initiation of prokaryotic replication. (5)
9. Briefly describe the process of regulation of gene expression in Lac Operon (5)
10. Differentiate between inducible and repressible operons. (5)
11. Define the terms constitutive and facultative genes. (5)
12. Complete the function of peptidyl transferase. (5)

OR

Write a short note on post translational modification. (5)
