REV-01
BBT/32/37

2022/07

B. Sc. BIOTECHNOLOGY
FOURTH SEMESTER
MOLECULAR BIOLOGY
BBT – 401

(Use Separate Answer Scripts for Objective & Descriptive)

Duration : 3 hrs. **Full Marks : 70**

(PART-A: Objective)

Time : 20 min. **Marks : 20**

Choose the correct answer from the following: ***1X20=20***

1. The sugar which is more reactive is?
   a. Deoxyribose and ribose
   b. Deoxyribose
   c. Pentose
   d. Ribose

2. DNA strands are connected by which bond?
   a. Glycosidic
   b. Disulphide
   c. Hydrophobic interaction
   d. Hydrogen

3. The complex of DNA and histone proteins at interphase is
   a. Chromosome
   b. chromatid
   c. chromomere
   d. Chromatin

4. The bond stabilizing nucleic acid structure is.....
   a. Hydrogen bond
   b. Vanderwall forces
   c. Phosphodiester linkage
   d. Stacking interaction

5. DNA is acidic. So it is dissolved in.....
   a. Milk
   b. Alcohol
   c. Oil
   d. Water

6. Single ori is found in .....?
   a. Bacteria
   b. Eukaryotes
   c. Only in plant cell
   d. Only in animal cell

7. .....is responsible for resolving topological strain.
   a. Topoisomerase
   b. Ligase
   c. Pol I
   d. Pol III

8. The product of replication in bacteria is.....
   a. Circular
   b. Linear
   c. Cut DNA
   d. Replicative fork

9. Rho factor is .....for transcription process.
   a. Mandatory
   b. Not mandatory
   c. Situation dependent
   d. All are correct

10. Choose the false statement for transcription
    a. RNA pol is required
    b. Primer is required
    c. The enzyme is DNA dependent
    d. Product is single stranded

11. Telomerase is the requirement of .....
    a. Transcription
    b. Replication
    c. Translation
    d. Post transcriptional modification

12. Space between Okazaki fragments are.....
    a. Ligated and filled
    b. Filled and ligated
    c. Only filled
    d. Only ligated

13. The enzymes mainly responsible for repair are
    a. Pol II and Pol III
    b. Pol I and Pol III
    c. Pol I, Pol II and Pol III
    d. Pol I and Pol II

14. Initiation factors are...in bacteria for translation
    a. 4
    b. 13
    c. 14
    d. 3

15. Ethidium bromide is an example of.....mutagen
    a. Mutant
    b. Physical
    c. Radiation
    d. Chemical

16. The amino acids are present at top of tRNA which is mediated by
    a. tRNA
    b. Variable loop
    c. Genetic code
    d. Anticodon loop

17. Imagine the DNA having no telomere.
    a. It is circular
    b. Circular and double stranded
    c. It is linear
    d. Circular or exonuclease DNA product

18. Post translational modification makes.....native?
    a. RNA
    b. DNA
    c. Both a and b
    d. Protein

19. The cap in mRNA is .....bond
    a. 5′3′
    b. 3′5′
    c. 3′3′
    d. 5′5′

20. Lac operon is.....in nature.
    a. Constant
    b. Polymorphism
    c. Monocistronic
    d. Polycistronic

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PART-B : Descriptive

Time : 2 hrs. 40 min. **Marks : 50**

[Answer question no.1 & any four (4) from the rest]

1. Explain the Watson and Crick model of DNA? What is difference between ribose and deoxyribose sugar. **6+4=10**

2. Write the mechanism of replication process with indicating the functions of enzymes involved in the process. **10**

3. What is transcription? Explain the mechanism of transcription in prokaryotes. **4+6=10**

4. Explain the process of central dogma? Write a note on translation initiation in bacteria. **7+3=10**

5. Write a note on mutation. Explain different types of mutations in detail. **3+7=10**

6. Explain Messelson and Stahl experiment with suitable diagram. **2+8=10**

7. Explain the role of ribosome during translation process. **3+7=10**

8. Define post transcriptional modification? Mention the types of modifications seen for mRNA. **2+8=10**

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