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Seat No.: \_\_\_\_\_

No. of Printed Pages: 02

( ) SARDAR PATEL UNIVERSITY  
 M. Sc. Integrated Biotechnology, Third Semester Examination  
 Day and Date: Thursday, 27-10-2016  
 Time: 10:30 am to 01:30 pm  
 Paper Code and Subject: PS03CIGB05, Molecular Biology-I

- Q-1 Multiple choice questions (All are compulsory). Total Marks: 70
- (1) A short length of DNA molecule has 30 cytosine and 30 guanine bases. The total number of nucleotide in the DNA fragment is [8]  
 a) 60                      b) 90                      c) 120                      d) 240
- (2) Bacteria possessing independent DNA molecules called \_\_\_\_\_ contain genes enabling these bacteria to tolerate toxic environments and antibiotics.  
 a) F plasmid    b) R plasmid    c) Col plasmid    d) Virulence plasmid
- (3) In protein synthesis adapter-tRNA attaches amino acids at its  
 a) G-end                      b) C-C-A end    c) DHU end                      d) Anticodon end
- (4) The actual turn of DNA fiber in Histone octamer is of?  
 a) 200 kbp    b) 165 kbp    c) 146 kbp    d) None of these
- (5) Zinc finger is made up of \_\_\_\_\_.  
 a) 20                      b) 30                      c) 50                      d) 60
- (6) Wobble hypothesis was proposed by  
 a) Watson    b) Crick                      c) H. G. Khorana    d) M. Nirenberg
- (7) Enzymes that place acetyl groups on histones are called:  
 a) histone acetylases                      b) histone deacetylases  
 c) histone acetyltransferases    d) histone deacetyltransferases
- (8) Cot analysis is related to \_\_\_\_\_.  
 a) Denaturation kinetics                      b) Renaturation kinetics  
 c) Melting temperature                      d) None of these
- Q-2 Answer the following questions in short. (Any Seven) [14]
- (1) What is satellite DNA?
- (2) Write a note on nucleotides and nucleosides.
- (3) Define plasmids and copy number?
- (4) Differentiate between euchromatin and heterochromatin?
- (5) Give a flowchart for interconversion of plasmid DNA by use of enzymes.
- (6) Write a note on ribosomal RNA (rRNA).
- (7) Draw three dimensional (3-D) structure of tRNA labeling its region.
- (8) Write a note on C-Value paradox.
- (9) Write a note on Karyotyping.

- Q-3 (A) Discuss the historical background along with an experiment behind the discovery of DNA? [6]  
(B) Differentiate between DNA and RNA and give an experiment to prove that RNA is a genetic material. [6]
- OR
- (B) Discuss chemical and physical properties of DNA. [6]
- Q-4 (A) Draw the structure of labeled Ti plasmid (Tumor inducing) and write its importance in transgenic development. [6]  
(B) Discuss the naming and classification of plasmids in detail. [6]
- OR
- (B) Discuss the structure and properties of messenger RNA (mRNA) in detail. [6]
- Q-5 (A) Draw the "Dictionary" of amino acid code words in mRNAs in tabular form and Explain Wobble hypothesis in detail [6]  
(B) Explain the History and at least two experiments conducted for deciphering of genetic code and the properties of Genetic code. [6]
- OR
- (B) Discuss in detail a technique widely used for measuring the complexity of DNA. [6]
- Q-6 (A) Explain packaging of DNA along with 10nm and 30nm fiber in detail? [6]  
(B) Discuss various DNA binding motifs with an example. [6]
- OR
- (B) Explain positive and negative supercoiling with linking number in detail. [6]

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