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Seat No: _____

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SARDAR PATEL UNIVERSITY

Course –B.Sc Biotechnology (III- Semester) Examination

Code No: US03CBIT21 Paper Title: Fundamentals of Biotechnology

Date : 17-11-2022, Day: Thursday Time : 10:00am to 1:00pm

Note: Figures to the right indicate marks

Total Marks: 70

Q.1 Multiple Choice Questions.

[10]

- i) A nucleoside composed of _____.
a) Sugar & Nitrogen base b) Only nitrogen bases
c) Sugar & Phosphate d) Nitrogen base & Phosphate
- ii) Which of the following is purine?
a) Adenine b) Cytosine c) Thymine d) Uracil
- iii) Which of the following is known as Watson and Crick model of DNA?
a) A DNA b) B DNA c) C DNA d) Z DNA
- iv) A plasmid consisting of its own DNA with a foreign DNA inserted into it is called
a) Recombinant DNA b) Palindromic DNA c) Junk DNA d) Satellite DNA
- v) pBR322 have which of the following selectable markers?
a) amp^R & tet^R b) neo^R & tet^R c) amp^R & Kan^R d) amp^R & neo^R
- vi) Conjugative plasmids
a) carries tra genes b) exhibit antibiotic resistance
c) do not exhibit antibiotic resistance d) do not carry transfer genes
- vii) Which position of a codon is said to be wobble?
a) 1st b) 2nd c) 3rd d) 4th
- viii) The anticodon is a structure present on _____.
a) mRNA b) tRNA c) rRNA d) SnRNA
- ix) The meiotic division takes place in _____ cells.
a) Reproductive b) Somatic c) Vegetative d) Stem
- x) DNA replicates in _____ phase of cell cycle.
a) M b) G1 c) S d) G2

- Q.2 Answer the following questions in short. (Attempt any 10) [20]**
- i) Mention about the physical properties of DNA.
 - ii) Draw Watson & Crick structure of DNA.
 - iii) Write about Z form of DNA.
 - iv) Define Plasmid.
 - v) What is mitochondrial DNA?
 - vi) Write in brief about F plasmid.
 - vii) What is SnRNA?
 - viii) Draw clover leaf model of tRNA
 - ix) Write about rRNA.
 - x) Give the significance of mitosis.
 - xi) What is check point in cell cycle?
 - xii) Mention about G2 phase of cell cycle.
- Q.3 a) Explain in detail Harshey & Chase experiments which prove DNA as a genetic material. [05]**
b) Write about the composition of DNA. [05]
- OR**
- Q.3 a) Discuss in detail Avery, McCleod & MaCarty experiments which prove DNA as a genetic material. [06]**
b) Give an account on chemical and biological properties of DNA. [04]
- Q.4 a) Discuss in detail the basic properties of Plasmid. [05]**
b) Write in detail about Ti & Ri plasmid. [05]
- OR**
- Q.4 a) Give an account on pBR322 [05]**
b) Write short note on chloroplast DNA. [05]
- Q.5 a) Define genetic code. Explain its properties in detail. [05]**
b) Describe the structure & function of mRNA. [05]
- OR**
- Q.5 a) Give the evidences of RNA as a genetic material. [05]**
b) Explain in detail principle & methodology for RNA isolation. [05]
- Q.6 a) Write a detail note on different phases of Mitosis with diagram [05]**
b) Define Apoptosis. Explain why cells undergo apoptosis? [05]
- OR**
- Q.6 a) Give a detail account on cyclin & cyclin dependent kinase [05]**
b) Describe Meiosis I. [05]