**Neha Malhotra**  **R.L. Institute M: 9416974837**

**Max Time : 1 hr** **Class = 12th Biology Test**  **Max Marks :25**

**MOLECULAR BASIS OF INHERITANCE**

**[upto Transcription]**

1. Multiple choice questions : [ 1 X 5 = 5]
2. Purines found in both DNA and RNA are :

|  |  |
| --- | --- |
| a) Adenine and Thymine | b) Adenine and Guanine |
| c) Guanine and Cytosine | d) Cytosine and thymine |

1. The association of histone H1 with a nucleosome indicates :

|  |  |
| --- | --- |
| a) DNA replication is occurring | b) The DNA is condensed into a chromatin fibre. |
| c) The DNA double helix is exposed | d) Transcription is occurring. |

1. RNA polymerase III transcribes.

|  |  |  |  |
| --- | --- | --- | --- |
| a) tRNA | b) ssDNA | c) mRNA | d) Reverse transcriptase |

1. Segment of mRNA removed during splicing are called \_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |  |
| --- | --- | --- | --- |
| a) introns | b) exons | c) Promoter regions | d) Integrator regions |

1. In Meselson and Stahl’s experiments, heavy DNA was distinguished from normal DNA by centrifugation in

|  |  |  |  |
| --- | --- | --- | --- |
| a) CsOH gradient | b) 14NH4Cl | c) 15NH4Cl | d) CsCl gradient |

1. What is Cistron. [ 1 ]
2. Define Chargaff’s rules. [ 1 ]
3. Name the negatively charged and positively charged components of nucleosomes. [ 1 ]
4. Mention the additional processes which hnRNA needs to undergo after splicing so as to become functional. [ 1 ]
5. Name the transcriptionally inactive region of chromatin in a nucleus. [ 1 ]
6. Discuss the role of enzyme DNA ligase plays during DNA replication. [ 1 ]
7. A DNA segment has total 2500 nucleotides, out of which 750 are guanines containing nucleotides. How many purine bases this DNA segment possess? [ 2 ]
8. Describe the structure of nucleosomes. [ 2 ]
9. Describe the experiment that established the identity of ‘transforming principle’ of Griffth. [ 2 ]
10. (i) Differentiate between DNA and RNA polymerase. [ 3 ]

(ii) Explain the elongation and termination process of transcription.

1. Draw a labelled diagram of a replication fork showing continuous and discontinuous replication of DNA strand. Also explain the reason of formation of continuous and discontinues strands. [ 5 ]