



## Karanjia Auto College, Karanjia, Mayurbhanj,

CC-11

### MOLECULAR BIOLOGY

#### UNIT-I

#### DNA replication, Repair & Transcription

Fill in the blanks

1 marks

1. Nucleic acid was 1<sup>st</sup> discovered by \_\_\_\_\_.
2. Nucleic acid was discovered in \_\_\_\_\_.
3. Monomeric units of nucleic acid is \_\_\_\_\_.
4. Phosphate esters of nucleosides is \_\_\_\_\_.
5. 6-aminopurine is \_\_\_\_\_.
6. Other name of guanine is \_\_\_\_\_.
7. Other name of cytosine is \_\_\_\_\_.
8. Other name of thymine is \_\_\_\_\_.
9. Other name of uracil is \_\_\_\_\_.
10. The configuration of all sugars in nucleic acids is \_\_\_\_\_.

Answer the followings.

1.5/2.5 marks

1. Define replication?
2. What is B DNA?
3. What is Z DNA?
4. Write 4 differences in prokaryotic and eukaryotic replication.
5. What is RNA?
6. Write a note on circular DNA.
7. What is DNA repair?
8. What is a primer?
9. Why RNA was replaced with DNA?
10. Write a note on DNA denaturation.

Long answer questions.

6 marks

1. Describe the process of DNA replication in prokaryotes.
2. Describe the experiment that shows the semiconservative mode of DNA replication.
3. What is DNA repair? Describe the pyrimidine dimerization and mismatch repair.

## UNIT-II

### Transcription and Translation

Fill in the blanks

1 marks

1. Transcription is carried out by \_\_\_\_\_ enzyme.
2. Initiation codon is \_\_\_\_\_.
3. tRNA transcription needs \_\_\_\_\_ polymerase.
4. mRNA is transcribed by \_\_\_\_\_ polymerase.
5. The direction of RNA synthesis is \_\_\_\_\_.
6. The direction of polypeptide chain synthesis is \_\_\_\_\_.
7. Translation occurs at \_\_\_\_\_ of cell.
8. \_\_\_\_\_ RNA is the template for transcription.
9. \_\_\_\_\_ RNA brings the amino acids to the site of translation.
10. The termination codons are \_\_\_\_\_.
11. Sequence of \_\_\_\_\_ RNA is important for determining the phylogeny of prokaryotes.

Answer the followings.

1.5/2.5 marks

1. Write a note on stop codons.
2. What is degeneracy of codons?
3. Write the structure of ribosome.
4. What is charging of tRNA?
5. Aminoacyl tRNA synthetase.
6. Write the steps of translation
7. What is central dogma of life?
8. Write Wobble's hypothesis.
9. Differentiate prokaryotic and eukaryotic initiation.
10. What is genetic code?

Long answer questions.

6 marks

1. What is transcription? Describe the method of transcription in prokaryotes.
2. What is genetic code? Write its characters.
3. Write the charging process of tRNA.
4. Differentiate prokaryotic and eukaryotic translation

## UNIT-III

### Post Transcriptional modifications and Processing of Eukaryotic RNA

Fill in the blanks

1 marks

1. Globin is a part of \_\_\_\_\_.
2. Introns are \_\_\_\_\_.
3. Exons are \_\_\_\_\_.
4. Cutting and joining of exons is \_\_\_\_\_.
5. Haemoglobin contains \_\_\_\_\_ number of globin proteins.

Answer the followings.

1.5/2.5 marks

1. What is a globin protein?

2. Write the structure of mRNA of globin gene.
3. What are exons?
4. What is split gene?
5. Define splicing with example.
6. What is alternative splicing?
7. What is exon shuffling?
8. What is RNA processing?

Long answer questions.

6 marks

1. Write the structure of globin mRNA.
2. What is splicing? Describe alternative splicing.
3. Write the processing of tRNA.

## UNIT-IV

### Gene regulation & Regulatory RNAs

Fill in the blanks

1 marks

1. Lac Y codes for \_\_\_\_\_.
2. Lac Z codes for \_\_\_\_\_.
3. Lac operon is a \_\_\_\_\_ kind of operon.
4. Full name of miRNA is \_\_\_\_\_.
5. Role of guide RNA is \_\_\_\_\_.
6. Role of operator is \_\_\_\_\_.
7. Role of promotor is \_\_\_\_\_.
8. Trp is a \_\_\_\_\_ kind of operon.

Answer the followings.

1.5/2.5 marks

1. What is an operon?
2. What is lac operon?
3. What is trp operon?
4. What are enhancers and activators?
5. What are repressors and silencers?
6. What is gene silencing?
7. What is the role of miRNA?

Long answer questions.

6 marks

1. What is an operon? Describe lac operon.
2. Describe trp operon.
3. How transcription is regulated in eukaryotes?
4. Describe the process of gene silencing.