

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)**

**MSc DEGREE EXAMINATION DECEMBER 2018
(First Semester)**

Branch -**BIOTECHNOLOGY**

MOLECULAR BIOLOGY

Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks!)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (10 x 1 = 10)

- 1 Who demonstrated that the concentrations of adenine in DNA are equal to that of thymine?

| | |
|--------------|---------------------|
| (i) Chargoff | (ii) Watson |
| (iii) Crick | (iv) Watson & Crick |
- 2 In DNA, the nucleotides are joined to one another in a chain by _____.

| | |
|--------------------|-----------------------------|
| (i) hydrogen bonds | (ii) phosphor diester bonds |
| (iii) SHbond | (iv) covalent bonds |
- 3 _____ adds RNA primers to the template strands.

| | |
|--------------|-----------------------|
| (i) Primase | (ii) Helicase |
| (iii) Ligase | (iv) DNA polymerase 1 |
- 4 _____ relaxes the DNA from its super coiled nature.

| | |
|---------------------|--------------|
| (i) Helicase | (ii) Primase |
| (iii) Topoisomerase | (iv) Ligase |
- 5 Which is the first step of gene expression?

| | |
|--------------------|---------------------|
| (i) Translation | (ii) Transcription |
| (iii) Transduction | (iv) Transformation |
- 6 _____ is an example for transcription inhibitors.

| | |
|------------------|-------------------|
| (i) Erythromycin | (ii) Streptomycin |
| (iii) Canamycin | (iv) Rifampicin |
- 7 The synthesis of proteins from RNA is known as _____.

| | |
|---------------------|-------------------|
| (i) transfection | (ii) transduction |
| (iii) transcription | (iv) translation |
- 8 Proteins will often be synthesized directly from genes by translating

| | |
|------------|--------------------|
| (i) tRNA | (ii) mRNA |
| (iii) rRNA | (iv) none of these |
- 9 Formation of purine and pyrimidine dimmers is called _____.

| | |
|-------------------------|--------------------------|
| (i) thermal disruption | (ii) indirect DNA damage |
| (iii) direct DNA damage | (rv) diadduct damage |

_____ are defined as DNA sequences that are able to move from one location to another in the genome.

- | | |
|---------------------------|---------------------------|
| (i) Transposable elements | (ii) DNA Repair mechanism |
| (iii) Transcription | (iv) Translation |

SECTION - B (25 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5x5 = 25)

- 11 a Illustrate the triple stranded DNA.
OR
b Discuss the properties of oncogenes.
- 12 a Elucidate the antibiotics that affect DNA replication.
OR
b Comment on DNA polymerases.
- 13 a Analyze the inhibitors of transcription.
OR
b Explain the structure of RNA.
- 14 a Bring out the characteristic features of genetic code.
OR
b Explain non coding RNAs.
- 15a Highlight the enzymes involved in recombination.
OR
b Elaborate double stranded break repair.

SECTION -C (40 Marks)

Answer ALL questions
ALL questions carry EQUAL Marks (5x8 = 40)

- 16 a Critically analyze the molecular approaches to cancer.
OR
b Enumerate the forms of DNA.
- 17 a Distinguish between lytic and lysogenic cycles.
OR
b Discuss the enzymes involved in DNA replication in detail.
- 18 a Analyze the steps of transcription in prokaryotes.
OR
b Elaborate *trp* operon.
- 19 a Evaluate translation take place in eukaryotes.
OR
b Elucidate the mechanism of RNAi.
- 20 a Criticize the types of recombination with examples.
OR
b Elaborate the DNA repair mechanism.