PSG COLLEGE OF ARTS & SCIENCE
, (AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2019
(Third Semester)

Branch - **BIOTECHNOLOGY**

MOLECULAR BIOLOGY

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 1 = 10)

1 A sequence of three nucleotides is called
(i) Message (ii) Code
(iii) Codon (iv) Amino acid

2 DNA is present in
(i) Nucleus only (ii) Nucleus, mitochondria and ER
(iii) Nucleus, mitochondria and chloroplast (iv) Nucleus, mitochondria and RER

3 What is the origin of replication?
(i) Particular site at which DNA replication starts
(ii) Site which prevents initiation
(iii) Random location on the DNA
(iv) Site at which replication terminated

4 Which of the following protein is required for connecting Okazaki fragments?
(i) Scaffold protein (ii) Helicase
(iii) Primase (iv) DNA gyrase

5 Which of the following mechanisms will remove uracil and incorporate the correct base? ’ ' . .
(i) Direct repair (ii) Base excision repair
(iii) Mismatch repair (iv) Nucleotide excision repair

6 The function of enzyme involved in base excision repair is
(i) Addition of correct base (ii) Addition of correct nucleotide
(iii) Removal of incorrect base “ (iv) Removal of phosphodiester bond

7 To Which class of transcription factor do nuclear receptors belong?
(i) Zinc finger proteins (ii) Leucine zipper proteins
(iii) Helix-tum-helixproteins (iv) Helix-loop-proteins

8 Which of the following statement about lac operon in E.coli is true?
(i) Promoter is the binding site for the lac repressor-
(ii) Operon is only switched on in the absence of lactose in the growth medium
(iii) p -galactosidase is only produced in large quantities when the lac repressor is bound to the operator
(iv) Lac operon mRNA is a polycistronic mRNA

9 Molecules which play the key role in the transfer of genetic information during protein synthesis are
(i) DNA (ii) RNA
(iii) Nucleic acid (iv) Lipids

10 Which form of structure has been adopted by RNA?
(i) A - form (ii) B - form
(iii) Z - form (iv) D - form

SECTION - B (25 Marks)

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

11 a Explain the structure of DNA.

OR

b How will you prove Meselson-Stahl experiment?

12 a Discuss the replication process of SS DNA using Ml3 DNA.

OR

b Describe about DNA polymerase.

13 a Show the homologous recombination.

OR

b Outline the broken end repair.

14 a Describe ribosomal protein operons.

OR

b Explain molecular biology of Lambda DNA.

15 a Infer the Wobble's hypothesis.

OR

b What are the steps involved in translation?

SECTION -C (40 Marks)

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

16 a Enumerate DNA as the genetic material.

OR

b Give an account on double stranded DNA.

17 a Outline the mechanism of replication factors and mechanism.

OR

b Give an account on prokaryotic replication.

18 a Discuss on glycosylase pathway.

OR

b Enumerate DNA recombination.

19 a Justify RNA editing in eukaryotes.

OR

b Highlight the mechanism of transcription in prokaryotes.

20 a Discuss on the structures and various types of RNA.

OR

How will you compare translation in pro and eukaryotes?

Z-Z-Z END