UNIVERSITY OF THE PUNJAB

Fifth Semester – 2019

Examination: B.S. 4 Years Program

Roll No. in Fig. .....

Roll No. in Words. .....

.....

.....

Signature of Supdt.:

PAPER: Microbial and Molecular Genetics **MAX. TIME: 15 Min.**

Course Code: BOT-303 Part–I (Compulsory) **MAX. MARKS: 10**

Attempt this Paper on this Question Sheet only.
Please encircle the correct option. Division of marks is given in front of each question.
This Paper will be collected back after expiry of time limit mentioned above.

Q.1. Encircle the right answer, cutting and overwriting is not allowed. (1x10=10)

1. Which of these describes a Holliday junction?

   a. A section of DNA where base pairing is not exact.
   b. A strand of DNA containing genetic material from two different chromosomes
   c. An interaction of two strands of DNA from homologous chromosomes
   d. A three stranded DNA structure where single stranded DNA has invaded a double helix.

2. Which of the statements below is false?

   a. The genetic code is overlapping
   b. The genetic code is universal
   c. Degenerate codons specify the same amino acids
   d. The genetic code is triplet

3. Transfer RNA bind during translation by the

   a. Codon
   b. Intron
   c. Anticodon
   d. Template

4. When genes are passed to other microbes of their same generation, it leads to

   a. Transversion
   b. Recombination
   c. Vertical gene transfer
   d. Lateral gene transfer

5. Identification of the sequence of genes in a chromosome is known as
   a. Gene mapping
   b. Karyotype
   c. Gene coding
   d. Gene linkage

P.T.O.

6. Codon can be read on

a. mRNA
b. tRNA
c. rRNA
d. DNA

7. Plasmids are suitable vectors for gene cloning because
a. these can shuttle between prokaryotic and eukaryotic cells
b. these are small circular DNA molecules with their own replication origin site
c. these are small circular DNA molecules, which can integrate with host chromosomal DNA
d. these often carry antibiotic resistance genes

8. F^+ bacteria can construct which of the following that allow the bacteria to join together to transfer genes?

a. gap junctions b. pili **c.** connecting channels d. Plasmodesmata e. Porins

9. A ____ mutation originates during meiosis while a ____ mutation originates during mitosis

a. germinal, somatic b. germinal, spontaneous c. somatic, germinal
d. spontaneous, point

10. Transcription is initiated when RNA polymerase binds to
a. a promotor
b. an initiator
c. a transcriptor
d. a codon

UNIVERSITY OF THE PUNJAB

Fifth Semester – 2019

Examination: B.S. 4 Years Program

Roll No. .....

PAPER: Microbial and Molecular Genetics **MAX. TIME: 2 Hrs. 45 Min.**

Course Code: BOT-303 Part – II **MAX. MARKS: 50**

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Differentiate between: **(10x2=20)**

a. HETEROCHROMATIN and EUCHROMATIN
b. EXOGENOTE and ENDOGENOTE
c. MISSENSE and SAME SENSE mutation.
d. CONDITIONAL LETHAL and BIOCHEMICAL mutations
e. LYTIC and LYSOGENIC life cycle of phages
f. EPISOME and PLASMID
g. STRUCTURAL GENES and REGULATORY GENES
h. ABORTIVE TRANSDUCTION and SPECIALIZED TRANSDUCTION
i. TOPOISOMERASES and LIGASES
j. BACTERIOPHAGE and PROPHAGE

Q.3. Write brief answers of the following questions. **(3x10=30)**

1. Write about the mechanism involved in POST REPLICATION REPAIR of DNA.
2. Explain briefly the role of HISTONE protein in packaging of DNA.
3. Write about the phenomenon of CATABOLITE REPRESSION with reference to *lac* OPERON.