UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : Fifth Semester – 2020

Paper: Microbial and Molecular Genetics

Course Code:BOT-303 Part – I (Compulsory) **Time: 15Min. Marks: 10**

Roll No. in Fig. ……

Roll No. in Words. ……

……

……

Signature of Supdt.:

Attempt this Paper on this Question Sheet only.
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. (10x1=10)

1. The sequence of the structural genes in lac operon is:

a. lacZ-lacY-lacA
b. lacA-lacZ-lacY
c. lacZ-lacA-lacY
d. lacA-lacY-lacZ

2. In the lac operon, under which of the following conditions will the lac genes be transcribed at high levels?

a. low glucose, high lactose
b. high glucose, low lactose
c. low glucose low lactose
d. high glucose, high lactose

3. This type of plasmid can exist with or without being integrated into the host's chromosome

a. medisome
b. lysosomes
c. episome
d. chromosome

4. The first demonstration of recombination in bacteria was achieved by _____

a. Lederberg and Tatum
b. Luria and Delberk
c. Joshua and Lederberg
d. Luria and Tatum

5. The F factor DNA is sufficient to specify how many genes?

a. 2
b. 10
c. 40
d.100

6. Which of the following is true for an Hfr x F- cross?

a. Frequency of recombination high, transfer of F factor low
b. Frequency of recombination high, transfer of F factor high
c. Frequency of recombination low, transfer of F factor high
d. Frequency of recombination low, transfer of F factor low

7. Euchromatin is

a. Highly condensed
b. Highly expressed
c. Loosely packed
d. None of the above

8. Germ-line therapy is

a. heritable
b. not heritable
c. sometimes heritable
d. unrelated to heritability

9. Slipped mispairing may cause deletions resulting in

a. Insertion inactivation
b. Translocations
c. iii.Single nucleotide substitutor
d. Frame shift mutations
e. Error in nucleotide choice

10. This type of recombination does not require homologous sequences and is important for the integration of viral genomes into bacterial chromosomes

a. replicative recombination
b. general recombination
c. site-specific recombination
d. None of the above

UNIVERSITY OF THE PUNJAB

B.S. 4 Years Program : Fifth Semester – 2020

Roll No. ……..

Paper: Microbial and Molecular Genetics **Time: 2 Hrs. 45 Min. Marks: 50**

Course Code:BOT-303 Part – II

ATTEMPT THIS (SUBJECTIVE) ON THE SEPARATE ANSWER SHEET PROVIDED

Q.2. Explain the following: (10x2=20)

a) NUCLEOTIDE and NUCLEOSIDE
b) P-CYTOTYPE and M-CYTOTYPE
c) Hfr and F+ CELLS
d) SAME SENSE MUTATION and NON-SENSE MUTATION
e) OPAL and OCHRE codon
f) RECOMBINATION REPAIR and EXCISION REPAIR
g) NUCLEOSOMES and NUCLEOTIDES
h) VIRULENT and TEMPERATE phages
i) CONDITIONAL LETHAL and LETHAL mutations
j) POLYMERASES and LIGASES

Q.3. Give brief answers of the followings. (6x5=30)

1. What do you understand by the term "CATABOLITE REPRESSION"?
2. How can you map the genes using the process of CONJUGATION in prokaryotes?
3. Explain in detail the process of TRANSFORMATION in bacteria.
4. Give a brief account about GENE-PROTEIN RELATIONSHIP.
5. What are the practical applications of MUTATIONS?
6. Explain the HOLIDAY MODEL of RECOMBINATION.