

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2019
(Second Semester)

Branch - APPLIED MICROBIOLOGY

MICROBIAL GENETICS AND GENETIC ENGINEERING

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10x1 = 10)

- 1 Which type of mutation results in the replacement of one amino acid in a polypeptide chain
(i) Mis-sense (ii) Frame-shift
(iii) Point (iv) Inverse
- 2 If both the dominant and recessive characters occur side by side in F1 hybrids, that is called
(i) Dominance (ii) Co-dominance
(iii) Incomplete dominance (iv) Recessive
- 3 Holliday model can be observed by _____ microscope.
(i) Light (ii) Electron
(iii) Dark-field (iv) Compound
- 4 The uptake of naked A,-phage DNA is called _____.
(i) Transversion (ii) Transfection
(iii) Conjugation (iv) Trahsduction
- 5 The naturally occurring F-plasmid of E-coli is used for the construction of
(i) BAC (ii) YAC
(iii) PAC (iv) SAC
- 6 Which type of restriction endonuclease is having both endonuclease and methylase activity?
(i) Type II (ii) Type III
(iii) Type I (iv) Type IV
- 7 _____ is a chemical used for the prevention of hydrogen bonding of RNA in northern blotting.
(i) Formaldehyde (ii) Acetaldehyde
(iii) Benzaldehyde (iv) Propyl aldehyde
- 8 The mRNA which is immobilized in a chromatography coloumn is used to generate _____.
(i) Taqs (ii) Tags
(iii) Enzymes (iv) Proteins
- 9 _____ enzyme is used for the addition of 32p in DNA sequencing by Maxam and Gilbert method.
(i) Poly nucleotide Kinase (ii) Polymerase
(iii) Phosphorylase (iv) Phosphatase
- 10 Incomplete sequence information is used to amplify target gene in _____ PCR.
(i) Quantitative (ii) Qualitative

SECTION - B (25 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 5 = 25) .

- 11 a List out the various chemical mutagens.
OR
b Discuss the process of complete linkage in Drosophila.
- 12 a Explain in brief about the self transmissible and mobilizable plasmids.
OR
b What is meant by Hfr transfer? Narrate the process in detail.
- 13 a How will you construct CDNA library? Explain its uses.
OR
b List out the various methods of selection of recombinants.
- 14 a Explain the process of southern blotting with it's uses.
OR
b Briefly illustrate the preparation of DNA micro arrays and add a note on it's advantages.
- 15 a What is RAPD? Elucidate it's procedure and pplicaitons.
OR
b Narrate the procedure and applications of Sanger's DNA sequencing method.

SECTION -C (40 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 8 = 40)

- 16 a Explain the Mendel's law of independent assortment with suitable example.
OR
b Illustrate the various types of DNA repair mechanisms with suitable example.
- 17 a Discuss about the process of transformation and conjugation.
OR
b Explain in detail about the Homologous and site specific recombination process.
- 18 a Discuss about the role of various vectors and it's role in gene cloning.
OR
b Write in detail about the various DNA modifying enzymes.
- 19 a Illustrate the process of Isolation and purification of DNA.
OR
b Give an outline for the following (a) SAGE (b) DNA finger printing.
- 20 a Compare and contrast the various types of PCR with it's principle, procedure and applications.
OR
b Write the preparation and uses of BAC and YAC library.