

Exam Date & Time: 26-Sep-2020 (02:00 PM - 05:30 PM)



PSG COLLEGE OF ARTS AND SCIENCE

Note: Writing 3hrs: Checking & Inserting Image : 30mins

MSc DEGREE EXAMINATION MAY 2020
(Fourth Semester)

Branch APPLIED MICROBIOLOGY

PRINCIPLES OF GENETIC ENGINEERING [19MBP20]

Marks: 75

Duration: 210 mins.

SECTION - A

Answer all the questions.

- 1) Choose the correct statement for adaptors.
 - (i) They are blunt ended at both the ends.
 - (ii) They are single stranded at both the ends
 - (iii) They may be single stranded at one end and other end may be blunt
 - (iv) They don't have extra restriction sites with in their sequence

(1)
- 2) Which of the following will have more efficient ligation?
 - (i) sticky ends
 - (ii) blunt ends
 - (iii) blunt ends and high concentration of DNA
 - (iv) blunt ends and low concentration of DNA

(1)
- 3) The RNA strand in the RNA-DNA hybrid is removed by
 - (i) RNase
 - (ii) RNase-H
 - (iii) Nuclease
 - (iv) none of these

(1)
- 4) Which of the following molecules can be analyzed using a northern blot?
 - (i) RNA
 - (ii) Carbohydrates
 - (iii) Proteins
 - (iv) DNA

(1)
- 5) Which of the following is a commonly used label in blotting techniques?
 - (i) Vimentin
 - (ii) Biotin
 - (iii) Avidin
 - (iv) Streptomycin

(1)
- 6) A genomic library is a collection of _____.
 - (i) Genes
 - (ii) Proteins
 - (iii) Vectors
 - (iv) Recombinants

(1)

- 7) The Ty promoter is specific for the _____.
 (i) Mutant strains
 (ii) Bacteriophage
 (iii) RNA polymerase
 (iv) DNA Polymerase (1)
- 8) Sequences that can function as origins of replication are called as _____.
 (i) Partial replicating sequence
 (ii) Self replicating sequence
 (iii) Autonomously replicating sequence
 (iv) Modified replicating sequence (1)
- 9) The samples in Sanger's method after reaction are separated using _____.
 (i) AGE
 (ii) PAGE
 (iii) PFGE
 (iv) 2-D gel electrophoresis (1)
- 10) Which of the following is a mismatch?
 (i) Polymerase – Taq polymerase
 (ii) Template – Double stranded DNA
 (iii) Primer – Oligonucleotide
 (iv) Synthesis – 5' to 3' direction (1)

SECTION - B

Answer all the questions.

- 11) Write brief account on Shuttle vectors. (5)
- a)
 [OR] Explain the importance of plasmid as cloning vectors. (5)
 b)
- 12) Give a detail account on Restriction mapping. (5)
- a)
 [OR] Give an account on screening libraries by colony hybridization. (5)
 b)
- 13) Describe the experimental procedure for RFLP analysis. (5)
- a)
 [OR] Explain briefly about Southern Blotting Techniques. (5)
 b)
- 14) Give an account on T₇ promoters in E. Coli for driving over expression of recombinant proteins. (5)
- a)
 [OR] Explain the detail note on Bioluminescent reporters. (5)
 b)
- 15) Give an account on shotgun sequencing of clone genome. (5)

a)

[OR] Explain the Maxam-Gilbert experiments which identified the DNA sequence.

b)

(5)

SECTION - C**Answer all the questions.**

16) Explain in detail about the DNA modifying enzymes and their functions.

(8)

a)

[OR] Describe the structure of cosmids and add a note on importance of cosmids.

b)

(8)

17) Briefly explain selection of Recombinant DNA delivery systems.

(8)

a)

[OR] Write a detailed account on the construction of cDNA library.

b)

(8)

18) Explain the various steps involved in Western Blotting Techniques.

(8)

a)

[OR] Explain in detail about Isolation and purification of DNA.

b)

(8)

19) Describe the functioning of gene expression analysis of RT-PCR.

(8)

a)

[OR] Discuss elaborately on DNA micro arrays.

b)

(8)

20) Explain the methods of PCR and their Applications.

(8)

a)

[OR] Discuss in detail about DNA sequencing by Sanger's method.

b)

(8)

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