



Avinashilingam Institute for Home Science and Higher Education for Women

(Deemed to be University under Category 'A' by MHRD, Estd. u/s 3 of UGC Act 1956)

Re-accredited with 'A+' Grade by NAAC. Recognised by UGC Under Section 12B

Coimbatore - 641 043, Tamil Nadu, India

Master's Degree Examination – June / July 2021

II Semester

Class: I PG

Major: Bioinformatics

Time : 3 Hours

Max Marks : 100

20MBIC09 Molecular Biology and rDNA Technology

Part- A

10x1=10

Choose the Correct Answer

- Non-coding RNA gene silencing leads to
a. Cancer b. Epigenetic modification c. SNPs d. Mutation CO1K1
- Identify the enzyme which cuts both the strand to relax DNA supercoiling in *E.coli*
a. Type III Topoisomerase b. Type I topoisomerase CO1K1
c. DNA gyrase d. DNA ligases
- Which of the following RNA serves the regulatory functions including splicing, gene silencing?
a. mRNA b. tRNA c. rRNA d. small RNA CO2 K4
- Streptavidin recognizes _____ labeling molecule CO2K2
a. Biotin b. Fluorescein
c. Digoxigenin d. Alkaline Phosphatases
- Enzymes present in Gibson Assembly are CO3K4
a. DNA ligase, DNA gyrase and Exonuclease
b. DNA ligase, DNA polymerase and Exonuclease
c. DNA ligase, DNA gyrase and Endonuclease
d. DNA ligase, DNA polymerase and Endonuclease
- Quantitative PCR can CO3K2
a. Detect, characterize and quantify
b. Detect, characterize and amplify
c. DNA Amplification
d. RNA Amplification
- In YAC _____ DNA insert can be cloned CO4K2
a. 100-400Kb b. 200-600 Kb c. 50-3000 Kb d. 200-800 Kb
- Order the smallest to largest vector in DNA transfer CO4K4
a. Cosmids, Plasmids, Bacteriophages
b. Plasmids, Bacteriophages, Cosmids
c. Bacteriophages, Plasmids, Cosmids
d. Cosmids, Bacteriophages, Plasmids
- Which is not true about DNA polymorphism? CO5K4
a. Variation of single basepair
b. Differs in length of DNA fragment
c. Used for identification of species
d. Presence of same gene in different number
- Expansion of CRISPER is CO5K2
a. Clustered Regularly Interspaced Short Palindromic Repeats
b. Clustered Reversed Interspaced Short Palindrome Repeats
c. Clubed Regularly Interstitious Short Palindromic Repeats
d. Cluster Regularly Inter Spaced Palindrome Repeats

Part B
Answer ALL questions

5x6=30

Each answer should not exceed 400 words or two pages

- 11.a. What are SNPs? Explain its significance. CO1 K1
(or)
11.b. Brief on the techniques used in isolation and separation of nucleic acid. CO1 K1
- 12.a. Comment on Translation of mRNA CO2K2
(or)
12.b. Outline nucleic acid blotting methods CO2K4
- 13.a. List the applications of genomic library CO3K3
(or)
13.b. How will you clone PCR products? CO3K4
- 14.a. Give a note on phage mid based vectors CO4K2
(or)
14.b. What is MAC? CO4K2
- 15.a. Comment on prokaryotic expression vectors CO5K2
(or)
15.b. Point out the role of RNAi in modulating gene expression CO5K4

Part C
Answer ALL questions

5x12=60

Each answer should not exceed 800 words or four pages

- 16.a. Discuss on enzymes involved in DNA replication. CO1K2
(or)
16.b. Compare and contrast Eukaryotic and prokaryotic DNA replication CO1K4
- 17.a. Explain transcription of DNA in Eukaryotes CO2K2
(or)
17.b. Criticize on design and production of gene probes. CO2K4
- 18.a. Demonstrate the process involved in generation of DNA libraries. CO3K2
(or)
18.b. Give an account on Gibson assembly cloning system CO3K2
- 19.a. Discuss in detail on YAC, BAC and PAC CO4K2
(or)
19.b. Elaborate on vectors used in eukaryotes and its application CO4K2
- 20.a. Deduce CRISPER /cas9 based genome editing ? CO5K4
(or)
20.b. Devise the procedure to identify and analyze mRNA? CO5K4