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KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Food Technology) 2023 & Previous Admissions
IV Semester Final Re Examination – July 2026

Pafe 2221

Food Biotechnology (2+1)

Marks: 50
Time: 2 hours

I Fill in the blanks (10x1=10)

1. An element that is present in a nucleotide but not in a nucleoside is
2. All pseudogenes DO NOT code for a
3. Imported food sample are sent to laboratory for testing.
4. DpnI restriction enzyme cuts only
5. Klenow fragment is derived from in *E. coli*.
6. in the plasmid which is having the site for many restriction enzymes and they are not present anywhere else in the plasmid.
7. foods use genetically modified organisms in their production to the largest extent.
8. includes rules of conduct that may be used to regulate our activities concerning the biological world.
9. Genetically modified organisms (GMOs) are produced using scientific methods that include recombinant DNA technology and

Match the enzyme (Column I) with its corresponding function (Column II)

Column I	Column II
A. Primase	1. RNA dependent RNA synthesis
B. Reverse transcriptase	2. DNA dependent DNA synthesis
C. RNA Replicase	3. RNA dependent DNA synthesis
D. DNA polymerase III	4. DNA dependent RNA synthesis

II Write short notes on ANY FIVE of the following (5x2=10)

1. If the GC content of a DNA molecule is 48%, what are the percentages of each of the four nucleotides?
2. What are the nucleotide substrates used during transcription?
3. What is photoreactivation process?
4. What is meant by jumping genes?
5. Name some enzymes sensed by food biosensors.
6. What is the role of digoxigenin in genetic engineering?
7. What is the status of GMO in India?

III Answer ANY FIVE of the following (5x4=20)

1. What is BER? Point out the steps of BER process?
2. The sequence shown here is a partial non-template or coding strand of wild type gene:
Shown below are the sequences of this DNA region from two different mutant strains.

5'-ATG GCC ATG CGG GGT CCT TTT AAA GGA-3'

Strain #2: 5'-ATG GCC TGC GGG GTC CTT TTA AAG GA-3'

Strain #3: 5'-ATG GCC ATG CGG GGT CCT TTT TAA GGA-3'

Identify the nature and total number of mutations at the DNA level in each mutant strain.

3. Write a note about Transformation.
4. Discuss the applications of cDNA library.

5. What is the role of adaptors and linkers in cloning?
6. What are the advantages of using immobilized enzymes?
7. What is the biggest concern with GMOs?

IV

Write an essay on ANY ONE of the following

(1x10=10)

1. Describe in detail about *E. coli* DNA replication process with neat labelled sketch.
2. What is extra chromosomal DNA? Explain the mechanism and method of isolating vector DNA from *E. coli* cells.
