



Q1/ Match **COLUMN A** with **COLUMN B** (Select Answer). Write down the question number and the letter of the correct answer next to it: **22 MARKS**

COLUMN A	COLUMN B
1. Transcriptomics	a) Coined the Term " Biotechnology"
2. Selective Breeding	b) Purification of the antibiotic penicillin
3. Recognition Site	c) Father of Electrophoresis
4. White Biotechnology	d) Synthesis and Amplification of cDNA.
5. FDA	e) Invention of Polymerase Chain Reaction
6. Karl Ereky	f) Applying Restriction Enzyme Type Five
7. RS-PCR	g) Improving the Production of Crops and Livestock
8. Alexander Fleming	h) Including all the RNA molecules.
9. Arne Tiselius	i) Designing of an organism to produce a useful product
10. Kary Mullis	j) Regulatory Approval of Biotechnology
11. gRNAs	k) Adjacent Inverted Repeat Sequence.

Q2/ Briefly Compare Between the followings:

- 1. Protein gel electrophoresis and Agarose Gel Electrophoresis.*
- 2. First strand reaction and second strand reaction in RS-PCR.*
- 3. Gold biotechnology and Red biotechnology.*
- 4. Renaturation step and Elongation step in PCR.*

32 MARKS

Q3/ What is the purposes of using agarose gel electrophoresis and how could you evaluate of the sizes of DNA fragments in an agarose gel electrophoresis?

22 MARKS

Q4/ Enumerate the followings:

- 1. Primers of Reverse Transcription Reaction.*
- 2. PCR Reaction Components.*
- 3. DNA Manipulative Enzymes.*
- 4. Factors effect on mobility of DNA fragments.*

24 MARKS

Good Luck