FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
DEPARTMENT OF PLANT BIOLOGY
FIRST SEMESTER BTECH EXAMINATION, 2017/2018 SESSION

COURSE CODE PLB 214
COURSE TITLE: RECOMBINANT DNA TECHNOLOGY
COURSE UNIT: 2
TIME ALLOWED: 2 HOURS

INSTRUCTION: ***ANSWER ANY THREE (3) QUESTIONS IN ALL; ONE (1) QUESTION FROM EACH SECTION***

SECTION A (*COMPULSORY*)

1 a. Using clear and labeled diagram, describe the mechanism involved in the production of a hybrid tomato (*lycopersicon esculentum*).
b. Outline the structural differences between DNA and RNA.

SECTION B

3 a. Draw the different types of deoxyribonucleotides.
b. If the base sequence in a polynucleotide chain of a DNA is G – C – A – A – T – G – C – A what will be the sequences of the complementary chain
c. Single polynucleotide chains contain the base sequence G – U – C – A – G
i). State whether it is a DNA or RNA strand ii). Justify your selection

4 a. Explain semi-conservative replication of DNA.
b. i. State an example where DNA is single stranded structure
ii. Outline three (3) differences between a single stranded DNA and a double stranded DNA.
c. List three (3) enzymes involved in DNA replication.

SECTION C

5 a. With appropriate examples and diagrams, name the cleavage pattern of endonuclease restriction enzyme
b. Concisely write on the steps involve in the formation of multiples copies of a hybrid DNA
c. What are the properties of restriction endonucleases that make it an important tool in recombinant DNA technology

6 a. Using the table below, write out the appropriate nomenclature of the restriction enzymes that could be produced from the following organisms on basis of Smith and Nathans system

S/N	Scientific Name of Organisms	Strain Molecules	Series Number of strain
1.	*Bacillus amyloliquefaciens*	H	I
2.	*Staphylococcus aureus*	3	A
3.	*Bacillus amyloliquefaciens*	H	I, II
4.	*Haemophilus aegyptius*	-	III
5.	*Escherichia coli*	R	y13

b. Highlight six (6) Properties of a good vector
c. List five types of Vector and explain any two

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COURSE CODE PLB 212
COURSE TITLE: VARIETY PLANTS
COURSE UNIT: 3
TIME ALLOWED: 2 HOURS

INSTRUCTION: ***ANSWER ANY FOUR (4) QUESTIONS IN ALL, TWO (2) QUESTIONS FROM EACH SECTION***

SECTION A

1 a. With the aid of diagrams, distinguish between the monocots and dicots
b. Explain at least, five modifications of the stem

2 a. With the aid of well labeled diagram outline the various parts of a leaf
b. Enumerate the characteristics of spermatophyte

3 a. Compare and contrast between the gymnosperms and angiosperms
b. "Angiosperms evolved from the gymnosperms and are believed to be more advanced". Justify

SECTION B

4 a. Copy and complete the table below

Common Name	**Botanical Name**	**Nature of Leave**	**Flower Symmetry**	**Nature of Seed**	**Nature of Ovary**	**Floral Formula**
Roselle			Zygomorphic			
	Corchorus olitorius				Superior	
Water melon				Exalbuminous		
Tamarind		Compound				

b. State five economic importance of the family cycadaceae to man

5 a. Write notes on morphology and anatomy of a pinus plant base on the following sub-headings:
i. Nature of branches ii. The leaf iii. Internal structure of the stem iv. Pollination
b. Clearly state the differences between class Cycadopsida and Coniferopsida

6 a. With the aid dendrogram give a detail classification of Gymnosperm
b. Highlight the characteristic of each class in 3a
c. State four (4) significance of heterospory in plant