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MAIN EXAMINATION

JANUARY – APRIL 2018 TRIMESTER

FACULTY OF SCIENCE

DEPARTMENT OF BIOLOGY

REGULAR PROGRAMME

BIO 406: PLANT BIOTECHNOLOGY

Date: APRIL 2018	**Duration: 2 Hours**
INSTRUCTIONS: Answer Question ONE and any other TWO Questions	

Q1. a) Describe how conventional plant breeding came into being **(5 marks)**

b) Describe micropropagation by adventitious shoots **(3 marks)**

c) When is genetic engineering applied in crop plants? Explain limitations of conventional plant breeding **(5 marks)**

d) Define the following terms **(1 mark each)**
   a) Polyploidy
   b) Plasticity
   c) Dedifferentiation
   d) Totipotency
   e) Clonal propagation

e) Describe transposable elements **(5 marks)**

f) Describe the organization of plant genomes **(5 marks)**

g) Describe direct organogenesis **(5marks)**

Q2. Explain the SIX steps of genetic engineering process in the development of transgenic plants **(20 marks)**

Q3. Describe the following tools in plant biotechnology **(20marks)**
   a) Molecular marker assisted selection

b) Tissue culture and micropropagation
c) Molecular diagnostic tools

Q4. Describe the plant tissue culture media. Preparation, handling and composition **(20 marks)**

Q5. Describe the factors affecting micropropagation and disadvantages associated with this technique **(20 marks)**

END