KATHMANDU UNIVERSITY
End Semester Examination
March/April 2017

Marks Scored:

Level : B.Tech
Year : IV

Course : BIOT 404
Semester: I

Exam. Roll No :

Time: 30 mins

F.M. : 20

Registration No:

Date : APR 0 7 2017

SECTION "A"
[10 Q.×0.5= 5 marks]

Choose and tick (√) the most appropriate answer

1) One of these is not the pigments induced during drought stress?
[ ] Anthocyanins [ ] Spermines [ ] Betalines [ ] Carotenoids

2) One of these is the conserved 7 base pair telomeric sequence present in plants?
[ ] CCCTAAA [ ] AAATCCC [ ] TTTCAAA [ ] GGGTAAA

3) One of these is not the constitutive promoter used during transformation in plants?
[ ] Glucocorticoid [ ] 35 S [ ] Ubiquitin [ ] Actin

4) Annealing temperature of RAPD primers is in between?
[ ] $(30\text{-}35)^0$ C [ ] $(35\text{-}40)^0$ C [ ] $(45\text{-}50)^0$ C [ ] $(50\text{-}55)^0$ C

5) First chloroplast transformation was achieved on?
[ ] Tomato [ ] Potato
[ ] Chlamydomonas [ ] Arabidopsis

6) One of these is not the functionalities of gibberellin?
[ ] Induces seed dormancy [ ] Induces maleness
[ ] Delays senescence [ ] Stimulates flowering

7) One of the following processes does not induce Abscisic acid mediated stomata closure?
[ ] Loss of turgor pressure
[ ] Calcium release
[ ] Inhibition of pH independent an-ion channel
[ ] Inhibition of inward rectifying K^+ channel

8) One of the following is not the stem specific gene in plants?
[ ] Shh [ ] GRPs [ ] HRGPs [ ] PRPs

9) One of the following is not the naturally occurring cytokinin
[ ] Trans-zeatin riboside [ ] Dihydro-zeatin
[ ] Benzyl-adenine [ ] Isopentenyl adenine

10) One of these is not the most common DNA- binding domain of eukaryotic transcription factors
[ ] Helix loop helix [ ] Leucine zipper domain
[ ] Zinc finger domain [ ] HMG domain

SECTION "B"

Fill in the blanks: [10 Q.×1=10 marks]

1) Salinity and drought has potential ..... interaction?

2) The altered expression of gene when its location is changed to another is termed as .....?

3) ..... are of the examples of photoreceptors in plants?

4) N chain fatty acid is converted to ..... chain during β-oxidation in mitochondria?

5) Signal tag used for protein translocation destined to peroxisomes lies in ..... terminal?

6) ..... proteins seem to be the main control point in gibberellin response?

7) Both RAPD and ISSR are the form of ..... markers?

8) Cold shock proteins (CSPs) rescues ..... and maintains proper initiation of translation?

9) If one gene influences two or more phenotypic traits, it is termed as .....

10) In C-4 plants .....is an enzyme that fixes CO_2 initially in mesophyll cells?

SECTION "C"

Define in one sentence. [5 Q.×1=5 marks]

1) 2,4 D

2) D-loop

3) VAS-1

4) Restorer of fertility (*rfs*)

5) Intergenic spacers

KATHMANDU UNIVERSITY
End Semester Examination
March/April 2017

Level : B.Tech.
Year : IV
Time : 2 hrs. 30 mins.

Course : BIOT 404
Semester: I
F.M. : 55

SECTION "D"

(Long answer Questions)
[3 Q.×7=21 marks]

1. With a brief introduction to the biological markers and its types, explain in detail about any two molecular markers with its uses followed by its advantage and disadvantage?

2. Explain briefly about the reporter gene system and its alternative uses, go in detail about one of the reporter gene system that is suitable for plants? And illustrate its cloning strategy?

3. Illustrating the requirements and limitations on chloroplast genome transformation, give an elaborate application for it?

SECTION "E"

(Short answer questions)

4. Write short notes on [6 Q.×4=24 marks]
   a) Cold induced abnormalities and repair mechanism in perennial grasses?
   b) Current and future perspectives in studying chloroplast physiology?
   c) Results of alteration in plant mitochondrial genome?
   d) Factors effecting gene expression in plants?
   e) Photorespiration
   f) Gametophytic self-incompatibility and factors effecting it?

5. Differentiate between [2 Q.×2=4 marks]
   a) Orthologous and Paralogous gene
   b) Mitochondrial and chloroplast protein translocation mechanism

6. Give reasons why/how (3 sentences maximum) [3 Q.×2=6 marks]
   a) Use of ethylene by plants for intra-specific communication
   b) Explanation to the increased copies of mitochondrial genome in plants?
   c) Supplemental calcium partly alleviates growth inhibition in salinity stressed plants?