

BITS PILANI ,DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
SECOND SEMESTER 2011-2012

COMPREHENSIVE EXAMINATION

COURSE NO.: BIO C352

14.6.12

MAXIMUM MARKS: 40

COURSE TITLE: Cell & Tissue Culture Technology

DURATION: 3 Hours

Answer Part A and Part B in separate answer books

Answer to the point; Answer all questions in the given sequence

PART -A

- Q1.(a) Why is it difficult to culture blood cells? (2)
- (b). What is the main component of serum? Mention some of the fractions of it along with their functions. (3)
- (c). How can cell line be authenticated based on the DNA fingerprinting analysis? (3)
- (d) . Describe an ideal wash-up area for the animal tissue culture laboratory. (2)
- Q2 (a). Why is it essential to have a quarantine room? (2)
- (b) What are the limitations of organ culture? (2)
- (c) Diagrammatically explain the hollow fiber perfusion system. (2)
- (d). Explain the FACS method for cell separation. (2)
- (e). Give the principle of cryopreservation. (2)

PART -B

- Q1. (a) How are the variants produced under *in vitro* conditions selected? Explain (2)
- (b) List out the potential problems that are associated with Anther Culture techniques. (1)
- (c) Name any two important secondary metabolites produced commercially, what are the factors affecting secondary metabolite production. Explain (2)
- Q2. (a) Briefly describe the process of preparing cell suspension. (2)
- (b) What factors must be taken into account while selecting explants in plant tissue culture? (2)

(c) What are cryoprotectants? In which way are they useful for plant tissue culture? (2)

Q3. (a) Briefly comment on the use of Antibiotics in the plant tissue culture media. (1)

(b) What is meant by gene silencing and gene leakage. What could be the implications of these on the environment? (2)

(c) Briefly describe the various techniques utilized for production of somatic hybrids. Explain the mechanism of fusion? (3)

Q4. (a) (b) Being an Agricultural Scientist, what do you think could be the most important agronomic traits in agricultural crops which can be genetically modified in this part of the world (UAE), describe the strategy for the same (Be specific) (2)

(b) What problems would you face during the last stage of the technique and suggest how could you overcome the same? (1)

*****GOOD LUCK*****

4/15/2012

**BITS PILANI DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
SECOND SEMESTER 2011-2012
TEST – 2 (CLOSED BOOK)**

COURSE NO.: BIO C352

24.4.12

MAXIMUM MARKS: 20

COURSE TITLE: Cell & Tissue Culture Technology

DURATION: 50 Minutes

Answer to the point; Answer all questions in the given sequence

Q1a. Genetic transformation in cotton , maize , corn and sugarcane have been quite successful w.r.t the genes transformed against boll worms, and borers and other traits .From your viewpoint , in what way it may or may not be of concern in terms of its effect on other organisms ? Justify your answer with suitable explanation [3]

b. What would be the strategy/technique you will design to generate a variant which is tolerant to environmental stress conditions? Explain with an example, list out the steps in the technique? [3]

c. Which technique of plant tissue culture do you think is routinely used for true to type plant propagation, explain the technique in brief. [2]

d. Name the most widely used vector mediated method to transfer genes in the plants? How is this vector used? [2]

Q2a. Which method can be used for large scale cultivation of Adherent and non adherent cells? Justify why it is better for the adherent cells? [2]

b. A laboratory is commercially supplying cardiac muscle cells. It has recently acquired a large order and hence need to enhance their production. The laboratory is facing a major problem of lack of space for growing cells in petriplates. Suggest an alternative to the laboratory scientists. [2]

c. A new cell line has been developed in the laboratory. Suggest the technicians and the scientists how to proceed with the cell line. [2]

Q3.a. How will a cell line be authenticated in an immunology laboratory? Explain the techniques used. [2]

b. A technician wants to separate the lymphocytes from the whole blood. Suggest the method he can use for the purpose. [2]

**BITS PILANI DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
SECOND SEMESTER 2011-2012
TEST – I (CLOSED BOOK)**

COURSE NO.: BIO C352

8.3.12

MAXIMUM MARKS: 25

COURSE TITLE: Cell & Tissue Culture Technology

DURATION: 50 Minutes

Answer to the point; Answer all questions in the given sequence

Q1a. Success of *in vitro* propagation of plants depends on to some critical factors /requirements, how do these factors contribute in doing so? Justify with example [4]

b. What do you think will be the important factors to be considered while setting up a tissue culture unit and a green house? [5]

c. What is the need of *in vitro* multiplying/ propagating the plants? [3]

Q2a. Why is it essential to have a skilled technician to working with animal cell lines? [3]

b. How can we achieve proper aeration and mixing in a suspension culture of animal cells? [4]

c. Why is it important to add antifoams in the medium? Give two examples of the antifoams that are routinely used. [3]

d. Why is the decision of CO₂ concentration in the medium inversely dependent on the concentration of the cells? [3]

**BITS PILANI, DUBAI CAMPUS
SECOND SEMESTER 2011-2012**

QUIZ- 2

**Course No.: BIO C352
Course Title: Cell and Tissue Culture Technology**

21.05.12

**Max. Marks: 7
Max. Time: 20 mins**

ID NO. :

Name:

1. How can we promote erythroid differentiation in tissue culture? [1]

2. Why is Methocel used in blood culture? [1]

3. Explain the term 'sterility gradient'? [1]

4. Why should we avoid wooden furnishings in a laboratory? [1]

5. Why are some rooms maintained at positive pressure, while some maintained at negative pressure in an animal tissue culture laboratory? [2]

6. Why is incandescent lighting preferred to fluorescent in a hot room? [1]