BITS PILANI DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
FIRST SEMESTER 2011-2012
COMPREHENSIVE EXAMINATION (CLOSED BOOK)

COURSE NO.: BIO C352 **9.1.2012** **MAXIMUM MARKS: 40**

COURSE TITLE: Cell & Tissue Culture Technology **DURATION: 3 Hours**

Attempt Part A and B in separate answer books

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

PART A

Q1a. What do you understand by Germplasm conservation of plants? How is it done traditionally? What could be the reasons that the traditional methods of conserving the germplasm are not preferred? ? [3]

b. What is the advantage of stepwise freezing? [1]

c. Why do you think that meristem Tip culture can help in generating virus free stock of plants? Explain [2]

d. What could be the potential problems you may face while going for large scale production of plants using micropropagation? Explain [2]

Q2a. What are the advantages of Somaclonal variations? [2]

b. Explain the techniques for isolation of protoplasts from plant tissues .List out the advantages and disadvantages of the techniques if any? [3]

c. What do you understand by Androgenesis ? List out the factors that can influence Androgenesis [2]

d. List out various applications of using callus & suspension culture in the research. [2]

Q3a. List out the various commercial media formulation available for plant cell culture (at least 4) [1]

b.What are the advantages of using Gelrite and phytagel and what care should you take while preparing medium using Gelrite and Phytagel? [2]

PART B

Q1a. Discuss the limitations of Animal tissue Culture. [2.5]

b. you have been asked to design an Animal tissue Culture laboratory. Suggest the layout for the same. [2.5]

c. Serum is rich source of growth factors and contains several ingredients which support cell proliferation. But still certain laboratories prefer to use a serum free medium. Justify. [2.5]

d. Explain with a neat labeled diagram a Gradient former. [2.5]

Q2ai. What are the different parameters that can be used for tissue characterization? [1.5]

ii. Mention the most reliable method for cell line preservation. [1.0]

b. Differentiate between a batch and continuous culture. [2.5]

c. Developing an organ culture is not an easy task. Mention the different criteria to be considered before starting an organ culture. [2.5]

di. How can we isolate macrophages from a mouse? [1.0]

ii. Justify the need for cryopreservation of cell lines. [1.5]

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FIRST SEMESTER 2011-20112
Test 2 (OPEN BOOK)

Course NO: BIO C352 **Maximum Marks: 20**
Course Title: Cell and Tissue Culture **Weightage: 20%**
Date: 11.12.2011

Attempt all the questions in the given sequence

Q1a. Suggest a method for large scale cultivation of Adherent and non adherent cells? [2]

b. A cell line developed in the laboratory was cryopreserved. After a few months, there was a need to use the cell line in the laboratory. However, the cell line failed to grow after cryopreservation. Justify and explain how the situation can be overcome? [4]

c. Explain the system best suited for the study and production of cellular metabolites from adherent cells. [3]

Q2a. How will a cell line be authenticated in a cytology laboratory? Explain the techniques used. [4]

b. What is the Miltenyi system? What is its significance? [3]

c. A biology laboratory is venturing into developing an animal tissue. On repeated efforts the tissue development failed due to necrosis. Justify the probable reasons for the failure and suggest different methods to develop a good tissue that has practical application. [4]

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FIRST SEMESTER 2011-2012
TEST – I (CLOSED BOOK)

COURSE NO.: BIO C352 **16.10.11** **MAXIMUM MARKS: 25**
COURSE TITLE: Cell & Tissue Culture Technology **DURATION: 50 Minutes**

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

Q1aList out 6major points specifying what is the need of Plant Tissue culture? [3]

b. List out the critical requirements for successfully multiplying the plants under *in vitro* condition? [3]

Q2a. What do you understand by Somaclonal variation? What are the different ways to detect & isolate SV? [5]

b. How will you get to know whether there is residual Auxin effect on the plants propagated under *in vitro* conditions? What could be done to correct the same? Explain [3]

c. For most types of cultures, Nitrate needs to be added along with other reduced form of nitrogen or ammonium ions to meet the requirements of Nitrogen rather than addition of Nitrate alone. Explain [3]

Q3a. Explain why you need to add a suitable osmoticum in the protoplast isolation & culture mix? Give two examples of the most commonly used osmoticum. How will you check the viability of protoplasts? Explain [5]

c. What concentration of Agar is commonly used while preparing the plant tissue culture medium & why is it so? [3]

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BITS PILANI DUBAI CAMPUS
FIRST SEMESTER 2011-2012
QUIZ– 2 (CLOSED BOOK)

Course No.: BIOT C352 **28.11.11** **Maximum Marks: 07**
Course Title: Cell and Tissue Culture **Maximum Time: 20 minutes**

NAME: ID No.

1. What is the significance of the Leibovitz L15 medium? [1]

2. Give two examples of oxygen carriers added while formulating an animal tissue culture media. [1]

3. Why is the viscosity of the medium important? How can it be controlled? [2]

4. Why is horse serum preferred during constitution animal tissue culture media? [1]

5. What is a Wave bioreactor? [1]

6. What is a continuous culture? [1]

BITS PILANI DUBAI CAMPUS
DUBAI INTERNATIONAL ACADEMIC CITY
FIRST SEMESTER 2011-2012
QUIZ– I (CLOSED BOOK)

COURSE NO.: BIO C352 **31.10.11** **MAXIMUM MARKS: 8**
COURSE TITLE: Cell & Tissue Culture Technology **DURATION: 20 Minutes**

Q1List out the various points justifying that Haploids are valuable in Plant Breeding. (4 major points) [1]

Q2a. What is the difference between Androgenic & Gynogenic Haploids? List out the drawbacks or limitations of Androgenesis? [1.5]

c. List out the various stages in the development of male gametophyte [1]

Q3a. List out different Fusogens used for the Protoplast fusion. [0.5]

b. What do you understand by nurse culture technique? [1]

Q4.a What is the difference between Organotypic &Histotypic cultures [1]

Q5.list out the advantages of Animal tissue culture (4 points) [1]

Q6a. You have been given a leaf and a suspension culture, how will you isolate the protoplast from these explants? (List Out the steps only) [1]

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