

# Question Paper

Exam Date & Time: 03-May-2018 (02:00 PM - 05:00 PM)



**MANIPAL ACADEMY OF HIGHER EDUCATION**

**MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES  
END SEMESTER THEORY EXAMINATIONS- MAY 2018  
PROGRAM: MPHARM SEMESTER 2 (PHARMACOGNOSY)**

**DATE: 03/05/2018**

**TIME: 2:00 PM - 5:00 PM**

**Medicinal Plant Biotechnology [PCO-MPG201T]**

**Marks: 50**

**Duration: 180 mins.**

**a**

**Answer all the questions.**

**Answer the following (5 marks x 8 = 40 marks)**

- 1) Explain various techniques of Protoplast fusion. (5)
- 2) Write a note on Temperature, pH of medium, Light and Oxygen affecting production of secondary metabolites. (5)
- 3) Explain the following (5)
  - a) Vectors and its properties
  - b) Restriction enzymes
- 4) What is Organogenesis? Write a note on direct and indirect Organogenesis. (5)
- 5) Write a note on various classes of compounds involved in Biotransformation. (5)
- 6) Give an account on synthetic seed. (5)
- 7) Discuss briefly various types of bioreactors. (5)
- 8) Explain direct methods of gene transfer. (5)

**b**

**Answer all the questions.**

**Answer the following with specific answers (2 marks x 5 = 10 marks)**

- 9) Define explant. How do you sterilize explant in PTC? (2)
  - A)
  - B) Differentiate between bioreactor and fermenter. (2)

- C) What are the factors affecting somaclonal variation? (2)
- D) Give the source and uses of Urokinase. (2)
- E) What is immobilization. Give its advantages and disadvantages. (2)

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