

**M. Pharm. (First Semester)  
EXAMINATION, Dec., 2011**

**(Grading/Non-Grading)**

**BIOTECHNOLOGY AND BIOINFORMATICS**

**(MPY – 102)**

*Time : Three Hours*

*Maximum Marks :  $\begin{cases} GS : 70 \\ NGS : 75 \end{cases}$*

**Note :** Attempt any *five* questions. All questions carry equal marks. Draw well labelled diagram wherever necessary.

1. (a) With suitable diagram, illustrate the structure and functions of DNA.  
(b) Write a note on Genetic code.
2. (a) Explain the salient features of recombinant DNA technology. Express various pharmaceutical applications of r-DNA.  
(b) Describe the concept and applications of Polymerase Chain Reaction (PCR).
3. (a) Give an exhaustive note on gene therapy.  
(b) Discuss various gene transfer techniques.

**P. T. O.**

**[HTTP://WWW.RGPVONLINE.COM](http://www.rgpvonline.com)**

4. (a) Write basic concepts of immunology and give the types of immunity.  
(b) What are vaccines ? Highlight modern vaccine technologies.
5. (a) Give an account on various phases of cell cycle.  
(b) Differentiate between Mitosis and Meiosis.
6. (a) List out various causes of cancers and discuss the molecular concept of cancer.  
(b) Define sampling and give the merits and demerits of sampling.
7. (a) Introduce bioinformatics and explain its applications in pharmaceutical industries.  
(b) Highlight biological databases.
8. Write short notes on any *two* of the following :
  - (a) Cell signaling
  - (b) Probability distribution
  - (c) Live vaccines