No. of Printed Pages – 2

MTBT-101

Roll No. | | | | | | | | | | |

M. Tech. (BIOTECHNOLOGY)

FIRST SEMESTER EXAMINATION, 2010-11

BIOCHEMISTRY AND BIOPHYSICAL TECHNIQUES

Time : **3 Hours** Total Marks : **100**

Note : **(i)** Attempt any **FIVE** questions.
(ii) Marks are indicated against each question.

1. Attempt any **Two** of the following : **10 x 2 = 20**

(a) What is the principle of zone electrophoresis? Also discuss its applications.

(b) Discuss ion-exchange chromatography and also give its applications.

(c) What is PAGE and discuss the types of PAGE.

2. Attempt any **Two** of the following : **10 x 2 = 20**

(a) Describe the structure of DNA with the help of a diagram.

(b) What are lipids? Discuss the structure and function of lipids.

(c) Differentiate between different types of DNA.

3. Attempt any **Two** of the following : **10 x 2 = 20**

(a) What is density gradient centrifugation? Give its principle and applications.

(b) Write a brief account of different types of rotors.

(c) How is ultra centrifugation different from rate zonal centrifugation?

4. Attempt any **Two** of the following : **10 x 2 = 20**

(a) What is ESR? Give the principle and applications of NMR.

(b) Give a detailed account of Phase contrast microscopy.

(c) What is electron microscopy? What are its types? What is the principle of electron microscopy?

5. Attempt any **Two** of the following : **10 x 2 = 20**

(a) Discuss in detail about radiotracer technology.

(b) Give in detail the use of radioactive isotopes in biological systems.

(c) Describe briefly what is ORD? What are its applications?

6. Attempt any **Two** of the following : **10 x 2 = 20**

(a) Discuss the functions of SDS and mercaptoethanol in SDS-PAGE. Also give reason as to why is an anionic detergent (SDS) used in SDS-PAGE.

(b) Discuss the principle and working of a scintillation counter.

(c) Define vitamins. Discuss the different types of vitamins giving examples.

7. Attempt any **Two** of the following : **10 x 2 = 20**

(a) With the help of a suitable diagram, discuss affinity chromatography and it applications.

(b) Discuss the primary and secondary structure of proteins giving examples. Give diagram also.

(c) What is Flourescene activated cell sorting? Give its principle and applications.