

Seat No. : \_\_\_\_\_

# MJ-102

March-2019

B.Sc., Sem.-III

## CC-201 : Biotechnology (Methods on Biotechnology)

Time : 2:30 Hours]

[Max. Marks : 70

1. (A) Discuss principle and working of spectroscopy and give its applications. 14

OR

(1) Explain Stoke's law for sedimentation and means to increase sedimentation rate. 7

(2) Discuss principle of chromatography and explain HPLC in detail. 7

(B) Answer any **Four** in brief : 4

(1) What is Raman effect ?

(2) Calculate Rf value if migration in paper chromatography in cm are Amino acid 2 and Solvent 8.

(3) What is a range of wavelength of UV light ?

(4) When Infra-red spectroscopy is recommended ?

(5) Name any one detector type used with Mass Spectrum analysis.

(6) What is Isoelectric point of pH ?

2. (A) Define bioassay and explain method for bioassay of antibiotics and vitamins. 14

OR

(1) Write principle of ELISA technique and give its applications. 7

(2) Describe gel diffusion technique for analysis of immunochemicals. 7

(B) Answer any **Four** in brief : 4

(1) Give the full form of RAST.

(2) What is use of Radioactive Tracer Technique ?

(3) Define Fluorescence.

(4) Draw diagram of Geiger Muller counter.

(5) Name the radioisotope used for cancer therapy.

(6) Name detector type used in Scintillation counter.

3. (A) Write detailed note on theory and applications of Microarray technique. **14**

**OR**

(1) Describe design and working of Thermal Cycler used for PCR. **7**

(2) Define  $T_m$  value and discuss molecular hybridization technique. **7**

(B) Answer any **Three** in brief : **3**

(1) What is the general range of nucleotide length for PCR Primers ?

(2) Match the Blotting technique with molecules analysed

(a) Northern Blotting, Dot Blotting, Western Blotting, Southern Blotting.

(b) Specific DNA sequence, Biomolecules, RNA Sequence, Specific Proteins.

(3) What is the source of polymerase commonly used in PCR ?

(4) How RT-PCR differs from normal PCR ?

(5) Find the number of PCR amplicons starting with 4 DNA molecules after 4 cycles.

4. (A) Write detailed note on various methods used for cultivation of animal viruses. **14**

**OR**

(1) Describe methods for enumeration of viruses. **7**

(2) Define screening and list desirable properties of industrially important cultures. **7**

(B) Answer any **Three** in brief : **3**

(1) What is Lyophilisation used for preservation of cultures ?

(2) Who crystallized viruses for the first time ?

(3) Give any two signs of viral growth over cell layer.

(4) What is PFU in assay of bacterial viruses ?

(5) Name any virus cultivated for producing vaccine.