SC

No. Of Printed Pages: 2

[43]

SARDAR PATEL UNIVERSITY
M.Sc., First Semester Examination
PS01CBIC02- Bioinstrumentation
4th April 2016, 10.30 am to 01.30 pm

Total Marks:70.

Q. 1. Choose the most appropriate answer. **(8 marks)**

i) Scanning tunneling microscope is a type of
- a) Light microscope
- b) Electron microscope
- c) Scanning probe microscope
- d) None of the above

ii) Three dimensional image is possible with
- a) Fluorescence microscope
- b) Phase contrast microscope
- c) Confocal microscope
- d) None of the above

iii) In 2-D gel electrophoresis the separation of proteins in first dimension is based on
- a) Molecular weight
- b) Charge mass ratio
- c) Isoelectric point
- d) None of the above

iv) In isopycnic density gradient centrifugation separation occurs on the basis of
- a) Size and mass
- b) Density
- c) Buoyant density
- d) None of the above

v) The most suitable spectroscopic method for elemental analysis is
- a) UV- Visible
- b) Infra red
- c) Atomic absorption
- d) Electron spin resonance

vi) In MALDI, the matrix is used, primarily to achieve
- c) Extensive fragmentation of the sample
- d) Soft ionization
- c) Detection of ions
- d) Acceleration of ions

vii) The basic principle of MRI is similar to that of
- a) NMR spectroscopy
- b) UV- Visible spectrophotometry
- c) IR spectroscopy
- d) Mass spectroscopy

viii) The most useful region of IR spectrum is
- c) Near IR spectrum
- d) Far IR spectrum
- c) Mid IR spectrum
- d) None of the above

Q. 2. Comment on any seven **7x2=14**

i) Negatron emission
ii) Beers and Lambert's law
iii) Principle of AAS
iv) Applications of Mass spectroscopy
v) Limitations of IR Spectroscopy
vi) Lens aberration
vii) Electroendosmosis
viii) Principle of thermal conductivity detector
ix) Depth of focus

Q. 3. a) Explain the types of filters used in Epi-fluorescence microscope. (06)
b) Explain flow cytometry. (06)

OR

b) Explain the instrumentation of atomic force microscope. (06)

Q.4. a) Write a note on SDS-PAGE. (06)
b) Write a note on: Density gradient centrifugation. (06)

OR

b) Explain the basic instrumentation of gas liquid chromatography. (06)

Q. 5. a) Write a note on: UV-Visible spectroscopy. (06)
b) Outline the methods for sample (06)

OR

b) Describe the basic theory of NMR and its applications in brief. (06)

Q. 6. a) Describe the basic principle of Mass spectroscopy (06)
b) What are radioisotopes? Explain the the working of liquid scintillation counting (06)

OR

b) What are Biosensors? What are its advantages and limitations? (06)

++++++++++++++++++++