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SARDAR PATEL UNIVERSITY

M.Sc., I Semester external examination

BIOCHEMISTRY- PS01CBIC02- Bioinstrumentation

22nd April 2015- 10.30 A.M. to 01.30 P.M.

Max Marks 70 Marks

1. Choose the correct answer (1x8=8)

(i) What must be done to specimen to increase the contrast of the structures viewed under a bright field microscope?

(a) illuminated (c) placed under coverslip

(b) stained (d) thinly sliced

(ii) Microscopes that are _____ will remain nearly focused after the low-power objective lens is changed to high-power objective lens.

(a) Monocular (c) parfocaled

(c) paracentered (d) properly adjusted

(iii) The lens that is within the eyepiece of the light microscope is called the

(a) scanning (b) low power (c) high power (d) ocular

(iv) Which would be the best to separate a protein that binds strongly to its substrate?

(a) Ion exchange chromatography (c) Affinity chromatography

(b) Gel filtration chromatography (d) Paper chromatography

(v) In a native PAGE, proteins are separated on the basis of

(a) net negative charge (c) net positive charge and size

(b) net charge and size (d) net positive charge

(vi) The correct order for the basic features of mass spectrometer is

(a) acceleration, deflection, detection, ionisation

(b) ionization, acceleration, deflection, detection

(c) acceleration, ionization, deflection, detection

(d) acceleration, deflection, ionization, detection

(vii) Which of the following is not an IR vibrational mode?

(a) stretching (b) scissoring (c) rocking (d) rolling

(viii) A Geiger-Muller counter measures

(a) The arrival of individual photons of ionizing radiation or high energy particles

(b) The incident of heat

(c) The incident of light

(d) The electronic pulse

2. Attempt any **seven** **2x7=14**

(a) Define: Lens aberration.

(b) Define: Stoke's shift

(c) Define: isoelectric point

(d) What is meant by planar chromatography?

(e) Define: electroendoosmosis.

(f) Write a note on prism monochromator.

(g) Briefly explain hollow cathode lamp.

(h) What are limitations of IR spectroscopy?

(i) Define: Biosensors.

3. (a) Write a short note on phase contrast microscopy. (06)

(b) Explain the principle of flow-cytometer. (06)

OR

(c) Explain the instrumentation and applications of SEM (06)

4. (a) Explain the process of differential centrifugation. (06)

(b) Write a note on 2-D gel electrophoresis. (06)

OR

(b) Explain ion exchange chromatography. (06)

5. (a) Explain the sources of infrared radiation (06)

(b) Write a brief note on instrumentation of UV-Visible spectroscopy. (06)

OR

(b) Explain briefly the types of atomizers used in atomic absorption spectroscopy. (06)

6. (a) Write an account on applications of radioisotopes. (06)

(b) Explain the methods of scintillation counting. (06)

OR

(b) Explain the basic instrumentation of NMR spectroscopy. (06)

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