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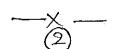
SARDAR PATEL UNIVERSITY

M.Sc (I Semester) Examinations (NC) Friday, 22nd March, 2019 10.00 am to 1.00 pm

PS01CBIC22 - Bioinstrumentation

Total marks: 70 1. Choose the correct answers. (08)i) Which of the following method separates biomolecules based on size? a) Gel permeation chromatography c) Paper chromatography b) Gas chromatography d) all the above ii) Which of the following techniques is the most suitable for detecting radioisotopes? a) Infrared spectroscopy c) NMR spectroscopy b) Scintillation counting d) AAS iii) The wavelength of an absorption is 495 nm. In what part of the electromagnetic spectrum does this lie? a) Ultraviolet-visible c) Microwave b) infrared d) radiowave iv) For X-ray crystallographic studies the sample should be in the form of a) Liquid c) Gas b) Semisolid d) Crystal v) You want to determine the location of a specific substance based on birefringence. Which of the following is the best technique for this purpose? a) electron microscopy c) bright-field microscopy b) phase contrast microscopy d) polarization microscopy vi) Which of the following techniques can help to separate biomolecules based on density? a) Centrifugation c) Spectroscopy b) Scintillation counting d) microscopy vii) The separation of charged molecule based on pH gradient is known as a) Isoelectro focusing c) native gel electrophoresis b)Dot plot technique d) None of the above viii) In normal phase chromatography are used a. Polar stationary phase and non-polar mobile phase b. Non-polar stationary phase and polar mobile phase c. Polar stationary phase and polar mobile phase d. Non-polar stationary phase and non-polar mobile phase

$(7 \times 2 = 14)$ 2. Attempt any any seven: a. Define: depth of focus b. Define: hydrodynamic focusing c. SDS-PAGE d. Write a brief note on columns used in Gas chromatography. e. Why quartz cuvette is used in UV sepectroscopy? f. Define: molar absorptivity g. What is a photodiode? h. Define: fluors i. What are parent ions and fragment ions? (06)3. a) Briefly explain the functioning of SEM. b) Explain the instrumentation of Fluorescence microscope (06)OR (06)b) Explain the types of oculars. (06)4. a) Explain the detectors used in HPLC. (06)b) Describe the process of differential centrifugation. (06)b) Discuss the principle and applications of GC. (06)5. a) Explain the working of photomultiplier tube in detail b) Explain the instrumentation and application of IR spectroscopy. (60)b) Outline the principle and uses of solid scintillation counting. (06)(06). a) Explain quadrupole analyzer in mass spectroscopy. b) Write a brief note on autoradiography (06)



(06)

b) Explain NMR spectroscopic technique in brief.