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[50] SEAT No._____ No. of Printed Pages: 2

SARDAR PATEL UNIVERSITY

M.Sc. Forensic Science, First Semester Examination

Wednesday, 8 November 2017

10:00 A.M to 1:00 P.M

PS01CFSC23: Instrumental Methods- Biological

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q. 1 Choose the most appropriate answer from the four alternatives given: [8]

(1) A pH measurement system consists of following parts:
(a) pH measuring electrode (b) reference electrode, (c) high input meter (d) all of the above

(2) If lenses are shaped like convex they converge the rays of light usually to create a :
(a) virtual image (b) real image (c) a and b both (d) none of the above

(3) Rocket electrophoresis is a type of :
(a) One dimensional double electroimmunodiffusion
(b) One dimensional single electroimmunodiffusion
(c) Two dimensional single electroimmunodiffusion
(d) all of the above

(4) In radioactive binging technique The amount of antigen-antibody complex formed is:
(a) proportional to the degree of antibody (b) proportional to the degree of radioactivity (c) proportional to the degree of antigen (d) none of the above

(5) In Zonal Development the analytes in the sample are separated on the basis of
(a) their distribution coefficients between stationary and mobile phase (b) their affinity for the mobile phase (c) their affinity for the stationary phase (d) all of the above

(6) The migration of charged particles through a solution under the influence of external field is called .....
(a) Electrophoresis (b) Electrocution
(c) Conductance (d) Electric current

(7) Mass spectrum is a plot of Relative abundance against the ratio of ..... .
(a) Mass/Proton (b) Mass/Charge
(c) Mass/Density (d) Density/Mass

(8) Which of the following is gas phase ionization method..... .
(a) Field desorption (b) Fast atom bombardment
(c) Electron impact ionization (d) Laser desorption

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Q.2 **Answer any SEVEN from the following:** [14]

(1) Define pH and Buffer
(2) What are SEM and TEM?
(3) Write basic principle for centrifugation
(4) Define Gene manipulation
(5) Define sensitivity.
(6) Write down the principle for thin layer chromatography .
(7) Write principle of sandwich ELISA in brief.
(8) Explain fast atom bombardment method
(9) Explain laser desorption

Q.3(a) Write principle working and applications of phase contract microscopy in brief. [6]
(b) Write detail account types of centrifuge rotors. [6]

OR

(b) Write note on sub cellular fractionation. [6]

Q.4 (a) Enlist types of Antigen –antibody reactions. Write detail account on precipitation reactions. [6]
(b) Write detail not on ELISA [6]

OR

(b) Write a note on "Nick Translation". [6]

Q.5 (a) Discuss principle of paper chromatography and explain its types in detail. [6]
(b) Enlist detectors used in HPLC. Explain any two in detail. [6]

OR

(b) Explain principle of electrophoresis. Write brief note on different support media used for electrophoresis. [6]

Q.6 (a) Explain working of mass spectrometry in detail with diagram [6]
(b) Enlist various types of ionization methods and explain any two in detail. [6]

OR

(b) Explain Tandem mass spectrometry with its applications [6]

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