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SARDAR PATEL UNIVERSITY
M.Sc. Home Science II Semester (ATKT)
External Theory Examination
Date: 4/12/2012, Tuesday
10.30 a.m to 1.30 p.m

PH02CFDN02/ PH02CFBT02- Principles and Applications of Instruments and Techniques

Total Marks: 70

Q.1 Choose the correct answer/answers from the given options

(8)

(i) The wavelength range for visible radiation is

- (A) 380-750 nm
- (B) 10-380 nm
- (C) 100-450 nm
- (D) 750-1500 nm

(ii) The diameter of packed column is....

- (A) 1.6-12.7 mm
- (B) 0.6-27 mm
- (C) 1.6-12.7 cm
- (D) 1.0-5.0 cm

(iii) The universal detector of GC is.....

- (A) FID
- (B) TCD
- (C) FPD
- (D) PID

(iv) A protein is a positively charged if solution pH is

- (A) Below its pI
- (B) Equal to its pI
- (C) Above pI
- (D) None of the above

(v) In a fluorometer second monochromator is placed between

- (A) Radiation source and sample holder
- (B) Radiation source and read out device
- (C) Sample holder and detector
- (D) Detector and read out device

(vi) The most inert gas which is used in GC is

- (A) Helium
- (B) Nitrogen
- (C) Hydrogen
- (D) Oxygen

(P.T.O)

C10

(-2-)

(vii) The stationary phase used in TLC for amino acid separation is ...

- (A) Silica gel
- (B) Cellulose
- (C) Starch
- (D) Aluminum oxide

(viii) Chemical used for decalcification is

- (A) 10 % formalin
- (B) 40 % formalin
- (C) 10 % xylene
- (D) Nitric acid

Q.II Answer in brief (any seven)

(14)

- a) X-ray radiation is useful for human life.
- b) Write the principle of AES.
- c) Enlist the properties of radiation source in spectroscopy.
- d) Two monochromators are used in fluorescence spectroscopy-give reason.
- e) Write any two applications of electron microscope .
- f) Capillary column is better over packed column.
- g) Flame must be constant in AES.
- h) Buffer pH is very critical in electrophoresis used for protein separation.
- i) FID is considered as a destructive detector.

Q.III Answer the following

(A) Define spectroscopy and its laws. Write in detail about different types of monochromators and detectors used in a spectrophotometer. **(8)**

OR

Write in detail about AAS.

(B) The absorption of a solution containing lycopene is 0.250 at 572 nm in a 1 cm path length cuvette. Find out....

- (i) the molar absorptivity of lycopene at 0.4 mM concentration of lycopene.
- (ii) the concentration of lycopene to have absorbance of 0.25. **(4)**

Q.IV Write the principle and application of the following (any four)

(12)

- a) ELISA
- b) Ion-exchange chromatography
- c) Centrifuge
- d) pH meter
- e) TLC
- f) AES

(2)

(-3-)

Q.V (A) Write in detail about different detectors of GC (6)

OR

Write in detail about column chromatography.

(B) Write in detail about protein separation using electrophoresis. (6)

OR

Write in detail about DNA separation by agarose electrophoresis.

Q.VII Write short note on (Any four) (12)

- a) Atomizers
- b) Paper chromatography
- c) Acids
- d) Radiation source of UV-visible spectroscopy
- e) Tissue sectioning
- f) Application of computers in Foods and Nutrition/Food Biotechnology
