

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

End Semester Examination – Summer 2022

Course: B. Pharmacy

Sem: VIII

Subject Name: Advanced Instrumentation Techniques

Subject Code: BP811ET

Max. Marks: 75

Date: 21/07/2022

Duration: 3.45 Hrs.

Instructions –

- 1. All questions are compulsory**
- 2. Answers to MCQs should be written in full sentences**
- 3. Draw diagrams / figures wherever necessary**
- 4. Figures to right indicate full marks**

Q. 1. Multiple Choice Questions (MCQs) = 20 x 1 = 20 (All the questions are compulsory)

i) NMR Spectroscopy is used for determining structure in which of the following materials?

- a) Radioactive materials
- b) Insoluble chemical compounds
- c) Liquids
- d) Gases

ii) Greater the electron negativity of the atom..... the deshielding effect

- a) Lesser
- b) Greater
- c) Remain same
- d) None

iii) Highest m/z peak in mass spectrum is called as -----

- a) Base peak
- b) Fragment peak
- c) Isotopic peak
- d) Parent peak

iv) If the number of neutrons and the number of protons are both even, then the nucleus has

- a) Half-integer spin
- b) Integer spin
- c) NO spin
- d) None

v) Which of the following is the type of TGA except?

- a) Isothermal / static TG
- b) Quasistatic TGA
- c) Dynamic TGA
- d) None

vi) The Rotating crystal method is mainly used to determine

- a) Lattice constant
- b) Lattice pattern

- c) Orientation in large single crystals d) None

vii) X-rays are -----

- a) Deflected by electric field but not by a magnetic field
- b) Deflected by magnetic field but not by an electric field
- c) Deflected by both a magnetic field and an electric field
- d) Not deflected by an electric field or a magnetic field

viii) In technique sample is heated to a constant weight at each of a series of increasing temperature

- a) Isothermal / static TG b) Quasistatic TGA
- c) Dynamic TGA d) None

ix) In a measurement, what is the term used to specify the closeness of two or more measurements?

- a) Precision b) Accuracy
- c) Robustness d) Specificity

x) With respect to calibration of uv-vis spectrophotometer, which of the following material is used to evaluate the control of absorbance

- a) Sodium thiosulphate b) Potassium dichromate
- c) Holmium oxide d) Potassium permanganate

xi) ICH stands for -----

- a) International Council for Harmonization
- b) International Conference for Harmonization
- c) International Council for Hominization
- d) International Conference for Hominization

xii) The lowest amount of analyte in a sample which can be detected and quantified is called as?

- a) Limit of Detection b) Accuracy
- c) Limit of Quantitation d) Specificity

xiii) Which of the following is type of immunoassay except?

- a) Radio immune assay b) Enzyme Immunoassay
- c) Pro Immunoassay d) All of the above

xiv) In solid phase extraction eluting solvent added to ----- analyte selectively

- a) Adsorb b) Desorb

- c) Both d) None of the above

xv) How many different types of radioimmunoassay are -----

- a) Four b) Two
c) One d) Three

xvi) Solvent extraction is better if repeated extraction is done using-----

- a) Large solvent b) Small Solvent
c) Extra solvent d) Normal solvent

xvii) Which of the following is most often used in the chromatograph in gas chromatograph MS?

- a) Curvette b) Paper support
c) Capillary tube d) Flask

xviii) Thermospray is used as an interface in-----

- a) GC-MS b) HPLC-MS
c) GC-FTIR d) HPLC-FTIR

xix) Which of the following is the type of separator used in commercial GC-MS systems?

- a) Jet type molecular separator b) Porous tube
c) Teflon tube d) Flow type separator

xx) GC-MS has been developed for which of the following systems?

- a) Packed column b) Open tubular column
c) Capillary column d) Porous layer column

Q. 2. Long Answers = 2 x 10 = 20 (Answer 2 out of 3)

- i) Explain in detail chemical shift and spin-spin coupling
ii) Describe in detail Thermogravimetric analysis
iii) Define Validation and explain it in detail as per ICH guidelines

Q. 3. Short Answers = 7 x 5 = 35 (Answer 7 out of 9)

- i) What are the applications of NMR?
ii) Discuss any two diffraction methods used in X-ray diffraction
iii) Explain calibration of UV-Visible spectrophotometer
iv) Write a short note on Radioimmune assay
v) Write a short note on GC-MS/MS
vi) Explain LC-MS/MS
vii) Explain continuous extraction type in liquid-liquid extraction

viii) Describe Differential Thermal Analysis

ix) What is the importance of Radioimmune assay? Enlist types & Explain applications of

Radioimmune assay (5M)

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