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DE–3585

DISTANCE EDUCATION

M.Phil. (Chemistry) DEGREE EXAMINATION, MAY 2008.

RESEARCH METHODOLOGY IN CHEMICAL RESEARCH

(Upto 2006 batch)

Time : Three hours Maximum : 100 marks

PART A — (10 × 3 = 30 marks)

Answer ALL questions.

1. Describe the term WWW.
2. Name any three popular search engines.
3. Write the various types of constants in C programming.
4. Write any one of the inheritance.
5. Write the principle of partition chromatography.
6. What are synthon? Give examples.
7. What are annelation reactions? Give an example.
8. How errors are classified?
9. What are fragmentation reactions?
10. Distinguish between accuracy and precision.

PART B — (5 × 6 = 30 marks)

Answer ALL the questions.

1. (a) What are primary and secondary source of literature? Explain them with examples.

Or

1. (b) How would you use internet for literature survey? Illustrate with an example.
2. (a) Write logical and loops which are used in C with any example.

Or

(b) Write the structure of C++ with example.

1. (a) What are the precautions one has to take in handling corrosive, toxic, explosive and carcinogenic chemical in your laboratory?

Or

(b) Write short note on asymmetric synthesis.

1. (a) Explain modern methods of Functional group inter conversion involving any two functional groups.

Or

(b) Write short notes on the following

* 1. Linear
  2. Convergent approach in organic synthesis

1. (a) What is meant by the term standard deviation? How would you determine standard deviation in results obtained by
2. (i) Summation of Data
3. (ii) Division or multiplication of Data.

Or

(b) What are different types of errors? How they would be eliminated? Explain.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

1. (a) Discuss the method of creating receiving and sending e-mail.
2. (b) What is science direct?
3. Write the programme for the Newtons raphson iteration.
4. Write short notes on
5. (a) HPLC
6. (b) Paper Chromotography
7. Explain in detail about ion exchange chromatography.
8. Describe with examples.
9. (a) Protecting a functional group
10. (b) Retrosynthesis
11. (a) Discuss the correlation coefficient used to establish a linear relation ship between two variables.
12. (b) From the following set of results calculate
13. (i) Mean value
14. (ii) Standard deviation
15. 35.46, 35.48, 35.49, 35.48 and 35.47

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DE–3586

DISTANCE EDUCATION

M.Phil. (Chemistry) DEGREE EXAMINATION, MAY 2008.

Non–Semester

INSTRUMENTAL METHODS OF ANALYSIS

(upto 2006 batch)

Time : Three hours Maximum : 100 marks

PART A — (10 × 3 = 30 marks)

Answer ALL questions.

1. Write short notes about  transition in UV-Vis spectroscopy.
2. In IR spectroscopy C = C stretching will have higher frequency than C–C stretching. Give reason.
3. Cyclooctatetraene has a conjugated eight carbon ring system. How is PMR spectra can help in deciding if the compound is aromatic or not?
4. Explain how 13C-NMR spectra is used to recognize the presence of carbons that do note bear protons.
5. How will you distinguish between 3-methyl and 4-methyl-cyclohexene using mass spectroscopy?
6. Write short notes on magnetic interactions in mossbauer spectroscopy.
7. What is circular birefringence?
8. Mention the significance of ‘‘g’’ value in EPR spectroscopy.
9. Write notes on cyclic voltammetry technique.
10. Mention the principles involved in colourimetry.

PART B — (5 × 6 = 30 marks)

Answer ALL questions.

1. (a) Discuss about chromophores and auxochromes.

Or

1. (b) 2-Hydroxy-3-nitroacetophenone shows two carbonyl stretching frequencies at 1692 and 1658 cm-1. Explain.
2. (a) Discuss about Chemical shift in NMR spectroscopy.

Or

1. (b) How the number and position of 13C-NMR signals can help in the identification between n-butyl alcohol and   
   2-Butanol.
2. (a) Mention the application of EPR to biological molecules containing, Fe(II).

Or

1. (b) Explain the application of mossbauer spectroscopy to iron compounds.
2. (a) Discuss Mc Lafferty rearrangement.

Or

1. (b) Mention the application of cotton effect curves in ORD and CD.
2. (a) Mention the applications of electrogravimetry techniques.

Or

1. (b) Explain the applications of Atomic absorption spectroscopy.

PART C — (4 × 10 = 40 marks)

Answer any FOUR questions.

1. Explain Woodward-Fieser rule for the calculation of UV absorption wavelength in conjugated dienes and trienes.
2. Discuss about IR vibrational frequencies and factors affecting them.
3. State the rules that characterize spin-spin splitting of PMR resonance peaks.
4. Explain why off-resonance decoupling is done in 13C-NMR spectroscopy.
5. Explain Octant rule and axial haloketone rule in ORD and CD.
6. Explain how stripping voltammetry technique is used for analytical determinations.

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