PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2018
(Sixth Semester)

Branch – **CHEMISTRY**

ANALYTICAL CHEMISTRY & INSTRUMENTAL METHODS OF ANALYSIS

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)

Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 Calculate the significant figures of the following: (a) 0.0405 (b) 4.050×10^{-2}.
2 What is the principle of thermometric titrations?
3 Write the selection rules of IR spectra.
4 What are stokes lines?
5 State Beer – Lambert's law.
6 What are chromophores? Give an example.
7 What is chemical shift?
8 What is hyperfine splitting in ESR?
9 Define diffusion current.
10 What is half – wave potential?

SECTION - B (25 Marks)

Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a Write the condition and advantages of thermometric titrations.
OR
b Discuss the DTA thermogram of calcium acetate monohydrate.

12 a Apply IR spectroscopy to find the metal – ligand bond in metal carbonyls.
OR
b Explain the instrumentation of Raman spectroscopy.

13 a Write short notes on colorimetric titrations.
OR
b Describe the applications of UV visible spectroscopy in Quantitative analysis.

14 a Write a note on the factors influencing chemical shift.
OR
b Discuss the instrumentation of ESR spectroscopy.

15 a Mention the important advantages and disadvantages of DME.
OR
b Explain the instrumentation of polarography.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 a) With a neat diagram explain the instrumentation of TGA.
b) Describe the various methods of minimizing errors. (5 + 5)

17 a) Compare Raman and IR spectroscopy.
b) Write a note on finger print region. (6 + 4)

18 a) Explain the instrumentation of UV – Visible spectroscopy.
b) Discuss the study of complex ions by UV – Visible spectroscopy. (5+5)

19 a) Describe the structural determination of methyl radical by ESR spectra.
b) Explain the instrumentation of NMR. (4 + 6)

20 Discuss the following:
(a) Analytical applications of polarography (b) Organic polarography. (5+5)

END