

PARUL UNIVERSITY
PARUL INSTITUTE OF APPLIED SCIENCES
MID SEMESTER INTERNAL EXAMINATION, APRIL 2017
B. Sc. Semester II (PCM)
Subject: Chemistry

Paper Code: 11105153

Title of the paper: Basics of Instrumentation

Date: 13 /04/2017

Time: 12.30 p.m. to 02.00 p.m.

Maximum Marks: 40

Instructions:

- 1. All questions are compulsory and options are given in first and second question only.**
 - 2. Numbers to the right of question indicate the marks of respective question.**
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Q. 1 Attempt any one question of the following. **(08)**

- (i) Write principle, instrumentation of FES?
- (ii) Write the applications of AAS and FES?

Q. 2 Attempt any three questions of the following. **(12)**

- (i) Differentiate between AAS and FES?
- (ii) Write the advantages of AAS over FES?
- (iii) Write a note on different instrumental methods?
- (iv) Write the properties of Electromagnetic radiations?
- (v) Calculate the frequency of radiation in Hertz of wavelength 3500\AA .

Q. 3 Do as directed. Attempt all five questions. **(05)**

- (i) Write the function of monochromator.
- (ii) Absorption and emission are quantized. What is meant by it?
- (iii) Name the methods of producing monochromatic radiations.
- (iv) Write the full forms of AAS and FES?
- (v) How many types of FES instruments are there? Give their names.

Q. 4 Write correct option in your answer sheet for following 15 multiple choice questions. **(15)**

Q. 1 Near UV region of the electromagnetic spectrum generally lies between

- | | |
|---------------|---------------|
| (A) 100-200nm | (B) 200-400nm |
| (C) 400-750nm | (D) 300-500nm |

Q. 2 MW region of electromagnetic spectrum generally lies between

- | | |
|---------------------------|------------------------|
| (A) 0.1-100cm | (B) 50-100cm |
| (C) 50-1000 μm | (D) 1-20 μm |

Q. 3 Absorptivity of a species depends upon

- | | |
|-----------------|-------------------|
| (A) Solvent | (B) Wavelength |
| (C) Path length | (D) Concentration |

Q. 4 Beer's law is mainly based on

- | | |
|-------------------------|--------------------------|
| (A) Monochromatic light | (B) Multichromatic light |
| (C) Dichromatic light | (D) all |

Q. 5 Reciprocal of absorbance is called as

- | | |
|------------------|-------------------|
| (A) Transmission | (B) Transmittance |
| (C) Absorption | (D) Emission |

- Q. 6 The temperature of the flame obtained by burning acetylene in nitrous oxide is about
(A) 1000°C (B) 2000°C
(C) 3000°C (D) none
- Q. 7 Acetylene –nitrous oxide flame produces temperature of about
(A) 2700°C (B) 4200°C
(C) 2950°C (D) 4500°C
- Q. 8 Which of the following fuels produce a temperature between 2700-3000°C
(A) Propane (B) Butane
(C) Hydrogen (D) All
- Q. 9 Which of the following elements can be used as ionization suppressor
(A) Cs (B) Cl
(C) Bi (D) Cu
- Q. 10 The distance between two consecutive peaks in a wave is called as
(A) Frequency (B) Wave no
(C) Energy (D) None
- Q. 11 The unit of wavelength is
(A) Nm (B) Pm
(C) A° (D) Hz
- Q. 12 The reciprocal of wavelength is called as
(A) Wavelength (B) Wave no
(C) Frequency (D) None
- Q. 13 Metal analysis can be done with the help of which instrumental technique
(A) FES (B) AAS
(C) XPES (D) ESCA
- Q. 14 How many types of burners are used in AAS?
(A) 1 (B) 2
(C) 3 (D) 4
- Q. 15 Which of the following solvents are used to convey the sample into the flame
(A) Low M.W. alcohols (B) Low M.W. Ketones
(C) Low M.W. esters (D) Alcohol mixed with water

-----ALL THE BEST-----