

GANPAT UNIVERSITY
B. TECH SEM- V (BM&I) CBCS REGULAR EXAMINATION– NOV-DEC 2016
2BM506 Analytical Instrumentation

TIME: 3 HRS

TOTAL MARKS: 60

Instructions: (1) This Question paper has two sections. Attempt each section in separate answer book.
 (2) Figures on right indicate marks.
 (3) Be precise and to the point in answering the descriptive questions.

SECTION: I

- Q.1** (10)
 a) What is chemical analysis? Write the advantages of instrumental analysis over classical methods. 5
 b) Explain electro analytical methods with their different types. 5
- OR**
- Q.1** (10)
 a) What is the basic principle of spectral method? Explain different separative methods briefly. 5
 b) Draw the block diagram of basic components of Analytical instrument and explain each block briefly. 5
- Q.2** (10)
 a) Derive the equation of centrifugal effect. Write applications of centrifuge. 5
 b) What is the function of the optical filter? Explain Monochromator with neat diagram. 5
- OR**
- Q.2** (10)
 a) What is the function of the photo detector? Explain photovoltaic cell with neat diagram. 5
 b) Explain photomultiplier tube with neat diagram. 5
- Q.3** (10)
 a) Write the difference between colorimeter and spectrophotometer. Explain different radiation source used for infrared spectrophotometer. 5
 b) What is the basic principle of flame photometer? Explain its different components briefly. 5

SECTION: II

- Q.4** (10)
 a) Explain the working of the Mass spectrometer with neat diagram. 5
 b) Explain with circuit diagram Total CO₂ measurement and HCO₃⁻ measurement. 5
- OR**
- Q.4** (10)
 a) Explain thermal ionization method. 5
 b) Draw the circuit diagram temperature control circuit for thermo stated chamber. Explain its working. 5
- Q.5** (10)
 a) Describe the operation of A to D converter used in complete Blood Gas Analyser. 5
 b) Draw the block diagram of Complete Blood Gas Analyzer. Write the difference between Acidosis and Alkalosis. 5

OR

Q.5

- a) Enlist and explain applications of electrophoresis.
b) Explain Coulter counter method for Automatic cell counting.

(10)

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Q.6

- a) Write the short note on classification of chromatography.
b) Explain Bright field microscopy with their advantages and limitations.

(10)

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-----END OF PAPER-----