

# Rajiv Gandhi University of Health Sciences, Karnataka

IV Year B.Pharm Degree Examination – May 2017

**Time: Three Hours**

**Max. Marks: 70 Marks**

## INSTRUMENTAL & BIO-MEDICAL ANALYSIS

(Revised Scheme – 3)

**Q.P. CODE: 2617**

Your answers should be specific to the questions asked  
Draw neat labeled diagrams wherever necessary

### LONG ESSAYS (Answer any Two)

**2 x 10 = 20 Marks**

1. State Beer and Lambert laws and derive the fundamental equation of quantitative spectroscopy. Discuss the factors responsible for deviations from Beer's law.
2. Discuss the different methods of sample handling in IR spectrophotometers.
3. Explain the different development techniques used in column chromatography.

### SHORT ESSAYS (Answer any Six)

**6 x 5 = 30 Marks**

4. Discuss the construction and working of flame ionization detector and thermal conductivity detector.
5. Compare and contrast between fluorometry and nephelo – turbidimetry.
6. Discuss the construction and working of calomel electrode.
7. Explain the principle involved in flame emission spectrophotometry. What are the different components present in a flame photometer?
8. What are the units for measurement of turbidity? How the reference suspension of standard turbidity for use in nephelometry is prepared? What is its composition and why it is selected as a reference substance?
9. Explain measures to control quality variation.
10. Draw a schematic diagram of a typical instrument for HPLC and outline the significance of each of the components.
11. a) The molar absorption coefficient of a drug is 780 at 525nm. A 0.005% solution of a pure sample at this wavelength in a 1cm cell shows an absorbance of 0.26. Calculate the molecular weight of the drug.  
b) The absorbance of 0.0025% solution of a sample of sulphadiazine at 540 nm in a 1cm cell was found to be 0.248. If the absorption coefficient of a pure sample is 101.6, what is the percentage purity of the sample?

### SHORT ANSWERS

**10 x 2 = 20 Marks**

12. Give two examples for absorption spectroscopy and two examples for emission spectroscopy.
13. Why nephelometric measurements of scattered light are carried out at right angles to the incident light.
14. Explain the effect of viscosity on fluorescence.
15. Mention the finger print region in IR spectroscopy. What is its significance?
16. Define conductance and give its units.
17. Draw a typical potentiometric titration curve and first derivative curve.
18. How the column length, number of theoretical plates and resolution are interrelated with one another.
19. Give any two official pharmaceutical applications of gas chromatography.
20. What are auxochromes? How do they affect spectral data?
21. What do you mean by analytical and preparative TLC?

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