



RA-1367-68

Fourth Year B. Pharm. Examination

March / April – 2010

PH - 404 : Pharmaceutical Analysis - II

(Instrumental & Quality Assurance)

Time : Hours]

[Total Marks : 70

RA-1367

Instructions :

(1)

नीचे दृशायेक निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
Fourth Year B. Pharm.	<input type="text"/>
Name of the Subject :	<input type="text"/>
PH - 404 : Pharmaceutical Analysis - 2	<input type="text"/>
Subject Code No. : <input type="text"/> 1 <input type="text"/> 3 <input type="text"/> 6 <input type="text"/> 7	<input type="text"/>
Section No. (1, 2,.....): <input type="text"/> 1	
Student's Signature	

- (2) Attempt all **six** questions.
- (3) Submit both sections in a **separate** answer book.
- (4) Answer precisely to the points only.
- (5) Draw well labelled diagrams wherever **necessary**.

- 1 (a) Explain the following statements : (any **four**) 8
- (i) In UV-Visible Spectrophotometry; experimental difficulties are associated with analysis of saturated compounds.
 - (ii) It is important to control temperature in FES.
 - (iii) Spin-spin coupling is a reciprocal affair.
 - (iv) specificity is a vital validation parameter for identification tests.
 - (v) Size exclusion chromatography is not applicable to isomers.
- (b) Write a brief note : 2
Karl Fischer method

- 2** (a) Answer the following in detail : (any **four**) **16**
- (i) What is TQM? Discuss the key elements required for the successful implementation of TQM in business organisations.
 - (ii) Classify immunochemical methods. Discuss the principle of RIA.
 - (iii) Enlist the factors affecting fluorescence and phosphorescence. Discuss any three in brief.
 - (iv) Explain the principle of Mass Spectrometry. Enlist the components of a mass spectrometer.
 - (v) In a reversed phase column, a solute was found to have a retention times of 31.3 minutes, while an unretained species required 0.48 minute for elution when the mobile phase was 30% (by volume) methanol and 70% water. Calculate : (i) K' (ii) a water/methanol composition that should bring K' to a value about 5. Polarity index for water and methanol are 10.2 and 5.1 respectively.
- 3** (a) Answer the following in brief : (any **three**) **9**
- (i) Discuss the instrumentation of DSC.
 - (ii) What is resolution? Calculate the resolution between two adjacent peaks if the retention times are 3.65 and 4.10 min and peak widths are 13.2 and 20.4 sec.
 - (iii) Discuss elution methods for Ion exchange chromatography.
 - (iv) Enist detectors used in Gas Chromatography and explain working of any one.
 - (v) What is Beer-Lambert's law? A 5×10^{-4} M solution of an analyte is placed in a sample cell that has a pathlength of 1.00 cm. When measured at a wavelength of 490 nm, the absorbance of the solution is found to be 0.388. What is the analyte's molar absorptivity at this wavelength?

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Instructions :

(1)

नीचे दृशावेव निशानीवाणी विगतो उत्तरवडी पर अवश्य लभवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
<input type="text" value="Fourth Year B. Pharm."/>	<input type="text" value="Student's Signature"/>
Name of the Subject :	
<input type="text" value="PH - 404 : Pharmaceutical Analysis - 2"/>	
Subject Code No. : <input type="text" value="1"/> <input type="text" value="3"/> <input type="text" value="6"/> <input type="text" value="8"/>	Section No. (1, 2,...): <input type="text" value="2"/>

(2) Attempt all six questions.

(3) Submit both sections in a **separate** answer book.

(4) Answer precisely to the points only.

(5) Draw well labelled diagrams wherever **necessary**.

4 (a) Explain the following terms : (any **nine**) **9**

(i) Linearity

(ii) Specific rotation

(iii) Larmour frequency

(iv) Robustness

(v) Wavelength

(vi) Gradient elution

(vii) Guard column

(viii) Spacer arm

(ix) Indicator electrode

(x) Base peak

(xi) Finger print region

(xii) Mesomeric effect.

(b) Answer the following in brief : **2**

(i) Explain the principle of flame photometry.

5 (a) Answer the following in detail : (any **three**) **12**

(i) What is Van Deemter plot?

Explain Eddy diffusion and longitudinal diffusion.

(ii) What is atomisation? What is plasma? Discuss working of Inductively coupled plasma source with a labelled diagram.

- (iii) What is McLafferty's rearrangement? How will you account for the appearance of prominent peaks at 43, 57, 72 in the mass spectrum of 2-butanol.
- (iv) Explain the methods used to simplify a complex NMR spectra.

6 (a) Answer the following in detail : (any two)

12

- (i) What is chemical shift? How does diamagnetic anisotropy affect it? What is coupling constant? What is the difference between chemical shift and coupling constant?
- (ii) Discuss the factors influencing vibrational frequencies in IR spectrophotometry.
- (iii) The following data were obtained for four compounds separated on a 20-m capillary column :

<i>Compound</i>	t_R (min)	W_b (min)
A	8.04	0.15
B	8.26	0.15
C	8.43	0.16

- (a) Calculate the number of theoretical plates for each compound and the average number of theoretical plates for the column.
- (b) Calculate the average height of a theoretical plate.
- (c) Calculate the resolution and selectivity factors for each pair of adjacent compounds
 $\{ t_M = 1.19 \text{ min} \}$
 Discuss how you might improve the resolution between compounds B and C.