2009-10
Con. 2581-10.
Sem VIII

Pharm. Anal. -V

MX-8488

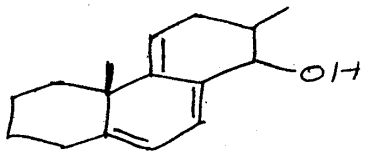
(2 Hours)

[Total Marks : 35

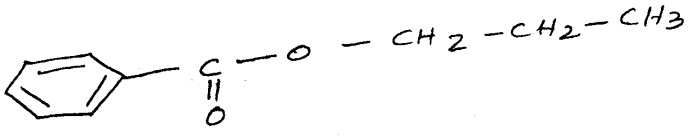
N.B. (1) Question No. **1** is **compulsory**.
(2) Attempt any **four** questions from remaining **six** questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Draw **neat** diagrams wherever **necessary**.

1. (a) Explain the following terms any **two** :– **4**
   (i) Combination bands
   (ii) Coupling constant
   (iii) Metastable ion
   (iv) Secondary packaging material.
   (b) Name the following any **three** :– **3**
   (i) Peak in mass spectrometry generally with highest m/e value
   (ii) Internal standard used in NMR spectroscopy.
   (iii) Effect due to which acetylenic protons are shielded
   (iv) Two Q.C. tests for collapsible tubes.

2. (a) Explain anisotropic effects with suitable examples. **4**
   (b) Calculate λmax for uv spectrum of **3**



3. (a) List out various ionisation techniques in Mass spectrometry. Explain one ionisation technique in detail. **4**
   (b) Explain how you will distinguish between the following compounds using any one spectral technique. **3**



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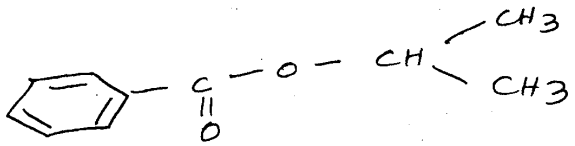


[TURN OVER

4. (a) Write a note on the principle involved in X Ray Diffraction. Discuss its pharmaceutical applications. **4**

   (b) A compound has molecular weight 59. **3**

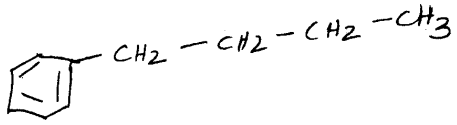
   Its IR Shows bands at 3300, 3155, 2950, 1660 cm^{-1}

   ^1H NMR δ 1.1 t 3 H
   δ 2.20 q 2 H
   δ 6.15 broad singlet 2H (exchangeable)

   Deduce the structure and justify your answer.

5. (a) Justify the significance of raw material analysis of pharamaceuticals. Write down the steps involved in analysis of actives. **4**

   (b) Depict two fragmentation pathways in the mass spectrum, giving m/z values, for the following compound. **3**



6. (a) What are hyphenated techniques ? Describe the interfaces of any one of them in detail. **4**

   (b) A compound has molecular weight 44 and shows the following spectral characteristics. **3**

   IR 2970, 2520, 1710 cm^{-1}
   ^1H NMR δ 2.14 d 3H
   δ 9.78 q 1H

7. Write short notes on any **two** of the following :- **7**

   (a) Theory and applications of Near IR spectroscopy
   (b) Quality control tests for plastic containers
   (c) Mc Laffarty rearrangement
   (d) Instrumentation of ^1H NMR spectroscopy.
