

**SUPPLEMENTARY**  
**MASTER OF PHARMACY (M. PHARM.) (CBCS-2019 COURSE)**  
**M.Pharm. Sem-II PHARMACEUTICAL CHEMISTRY :SUMMER- 2022**  
**SUBJECT : ADVANCED SPECTRAL ANALYSIS**

Day : Wednesday

Time : 10:00 AM-01:00 PM

Date : 14-09-2022

S-20762-2022

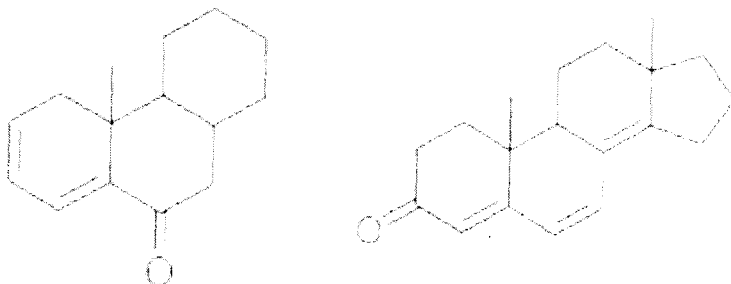
Max. Marks : 75

**N.B.**

- 1) Q. No. 1 and 5 are **COMPULSORY**. Out of remaining answers any **TWO** Questions from each section
- 2) Answers to both sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.

**SECTION - I**

- Q.1** Calculate wavelength maxima value of following organic compounds using **(08)** Woodward – Fieser Rules.



- Q.2** Drive the correct structure from the given spectral data with justification **(15)**  
MW = 150 (contains two oxygen atoms)  
IR :- 3350, 3008 & 1745  $\text{cm}^{-1}$   
PMR :- ppm: 11.3 (br s, exchangeable, 1H), 7.20 (br s, 5H), 2.90 (t, 2H), 1.61 (t, 2H)  
CMR :- ppm : 179.6 (s), 140.2 (s), 128.5 (d), 128.2 (d), 126.3 (d), 35.5 (t), 30.6 (t).  
EIMS :- m/z : 150, 104, 91 (100%), 77, 65 & 51.
- Q.3** Give major modes of fragmentation for compounds containing ester group, 3<sup>o</sup> alcohol group, 1<sup>o</sup> amine group and aldehyde group (compounds have one functional group in the structure). **(15)**
- Q.4** Write notes on any **TWO** of the following **(15)**
- a) LC – MS
  - b) Sampling techniques used in FTIR
  - c) Finger print regions of IR spectrum.

**SECTION - II**

- Q.5** Write in details on instrumentations of super critical fluid chromatography. **(07)**
- Q.6** Discuss in details on principle, instrumentation and applications of LC- FTIR. **(15)**
- Q.7** Write in details on principle, instrumentation and applications of TGA. **(15)**
- Q.8** Write notes on any **TWO** of the following **(15)**
- a) Raman spectroscopy
  - b) ELISA
  - c) Flash chromatography

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