

Exam Date & Time: 03-May-2018 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS - MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL CHEMISTRY)

DATE: 03/05/2018

TIME: 02:00 PM - 5:00 PM

Advanced Spectral Analysis [PCH-MPC201T]

Marks: 50

Duration: 180 mins.

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Explain the various steps involved in 2D NMR Spectroscopy with diagram. List out the various 2D NMR techniques. (5)
- 2) Explain the Mass fragmentation rules. (5)
- 3) List out the similarities and differences between Proton NMR and ^{13}C NMR. (5)
- 4) What are metastable ions? When do they appear in a spectra and what is their importance? (5)
- 5) Explain GC-MS in terms of its principle and application in pharmaceutical sciences (5)
- 6) What are the common problems in chromatographic columns and how are they solved? (5)
- 7) What is flash chromatography? Explain the advantages and applications (5)
- 8) With an example, explain Woodward-Fieser rule for α, β carbonyl compounds (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) Write the respective chemical shift value for the following protons:
 - i) Aromatic protons (2)
 - ii) Methyl protons

- A) iii) NH₂ protons
 iv) OH protons
- B) What are deuterium exchange reactions?
- C) Define Mass Fragmentation.
- D) Mention the IR values for any four important functional groups
- E) What you mean by MALDI and TOF?

(2)

-----End-----

Exam Date & Time: 05-May-2018 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS - MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL CHEMISTRY)

DATE: 05/05/2018

TIME: 02:00 PM - 5:00 PM

Advanced Organic Chemistry II [PCH-MPC202T]

Marks: 50

Duration: 180 mins.

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Discuss in detail the principle, mechanism and applications of microwave synthesis. (5)
- 2) Write a note on broad perspectives of peptide synthesis. (5)
- 3) Define pericyclic reactions. Mention the types with examples. (5)
- 4) Give the working principle and synthetic applications of continuous flow reactors. (5)
- 5) What are the different types of chirality transfer and discuss intra annular chirality transfer with an example. (5)
- 6) Enlist the important catalyst and building blocks used in asymmetric aldol reactions. (5)
- 7) Explain chiral separation by column chromatographic method. (5)
- 8) Discuss in detail asymmetric hydrogenation of alkenes. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) Mention applications of ultrasound assisted reactions. (2)
 - A)
 - B) What is meant by side reactions in peptide synthesis? (2)

- C) Write the significance of bio catalyst.
- D) Write two examples for metal catalyzed organic synthesis.
- E) Write the importance of Wilkinson's catalyst and Ziegler-Natta catalyst.

(1)

(2)

-----End-----

Date & Time: 07-May-2018 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS - MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL CHEMISTRY)

DATE: 07/05/2018

TIME: 02:00 PM - 5:00 PM

Computer Aided Drug Design [PCH-MPC203T]

Marks: 50

Duration: 180 mins.

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Explain the principle of Molecular mechanics. (5)
- 2) Explain the different virtual screening methods. (5)
- 3) Enlist the methods used in QSAR studies and explain any one of them. (5)
- 4) Discuss the different in silico drug design techniques. (5)
- 5) Explain Free Wilson model and give its relationship with Hansch analysis (5)
- 6) How ADMET properties are predicted and analysed? What is their importance in drug design? (5)
- 7) Explain the various descriptors used in QSAR studies. Mention their uses (5)
- 8) Discuss the various similarity based methods of screening. (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) What is quantum mechanics? Mention the methods used in quantum mechanics. (2)

A)

- B) Define docking and list out the softwares which help in docking.
- C) What is COMFA and energy minimisation?
- D) Enlist the various statistical methods used in QSAR studies
- E) Define pharmacophore with the help of two examples.

-----End-----

Exam Date & Time: 09-May-2018 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES
END SEMESTER THEORY EXAMINATIONS - MAY 2018
PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL CHEMISTRY)

DATE: 09/05/2018

TIME: 02:00 PM - 5:00 PM

Pharmaceutical Process Chemistry [PCH-MPC204T]

Marks: 50

Duration: 180 mins.

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Explain the principles of process green chemistry. (5)
- 2) Discuss in brief the process design reasons for selection of a solvent (5)
- 3) Explain the mechanism involved in the formation of crystals from a solution (5)
- 4) Discuss on the salt selection strategy in drug development (5)
- 5) Explain the kinetics and mechanism of aromatic nitration. (5)
- 6) What are the different types of halogenation? Explain. (5)
- 7) How complex formation modifies reagent reactivity? Explain. (5)
- 8) Explain the reduction reactions involving hydrogen transfer and metal hydrides (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) What is Inclusion and Occlusion in crystallization? (2)
 - A)
 - B) What is process excellence index? Give its importance in process chemistry (2)

- C) What are the general steps involved in scale up operations?
- D) Define reaction progress kinetic analysis.
- E) What are the characteristics of cost-effective routes?

-----End-----