

SEAT No. _____

Number of printed pages: 02

[65]

SARDAR PATEL UNIVERSITY
M. Sc Pharmaceutical Chemistry (Semester-III) Examination
Thursday, 02/11/2017; Time-2:00 PM to 5:00 PM
SUBJECT CODE: PS03CPCH01
SUBJECT TITLE: Drug Design and Development

Maximum Marks: 70

Note: (1) All questions are compulsory.

(2) Figure to right indicates total marks of question.

Q-1

Choose the correct option for the following:

1 × 8

- Term measures the e-withdrawing or e-donating influence of substituents and can be measured experimentally is known as:
a. Taft's Steric Factor
b. Hammett Substituent Constant
c. Williamson's constant
d. None
- Comperative Molecular field analysis is known as
a. CoMFA
b. CMFA
c. CMoFA
d. CMFiA
- Maximize the interaction and minimize the side effect is:
a. Drug Optimization
b. Drug regulation
c. Drug targeting
d. None
- The important functional group of drug responsible for interaction is:
a. Prodrug
b. Pharmacophore
c. Functionality
d. Can't say
- Phenyl group interact with binding sites by means of
a. Hydrophobic region
b. Electrovalent bond
c. Covalent bond
d. Hydrogen bond
- If drugs are readily metabolized and stay moderately in the body can cause
a. Good therapeutic effect
b. Diagnostic effect
c. Side effect
d. Can't say
- When an antagonist is bound to its receptor for long period of time is:
a. Desensitization
b. Tolerance
c. Coherence
d. Sensitization
- Measure of the maximum biological effect that a drug can produce is:
a. Tolerance
b. Coherence
c. Dependence
d. Efficacy

Q-2

Answer the following (Any Seven).

- Describe the importance of (log P) value.
- Define the QSAR.
- Define Molar Refractivity (MR)?
- Describe the Lead compound.
- Highlight the antisense approach of drug design.

2 × 7

- 6. Discuss the Process development.
- 7. Define pharmacophore.
- 8. What is partial antagonist?
- 9. What is sensitization and desensitization?
- Q-3 A. Describe the importance of Free-Wilson Approach. 6
- B. Explain Hansch Equation. 6

OR

- B. Write note on QSAR. 6
- Q-4 A. Describe irrational approach of Drug design. 6
- B. Explain the Binding role of aromatic rings, esters and amines 6

OR

- B. Write a note on Drug Development. 6
- Q-5 A. Elaborate the various strategies to improve the absorption . 6
- B. What is meant by targeting drugs? How the drug on GIT infection and Tumor cells can be targeted? 6

OR

- B. Describe the strategies adopted to making drug less resistance to drug metabolism. 6
- Q-6 A. What is receptor? How does the message get received? 6
- B. How the antagonists can be designed which can act at the binding site and out of the binding site. 6

OR

- B. Elaborate Competitive (reversible) inhibitors with suitable examples. 6

SEAT No. _____

SARDAR PATEL UNIVERSITY

M. Sc Pharmaceutical Chemistry (Semester-III) Examination

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Monday, 06/11/2017; Time-2:00 PM to 5:00 PM

SUBJECT CODE: PS03CPCH02

SUBJECT TITLE: Medicinal Chemistry-II

Maximum Marks: 70

- Note: (1) All questions are compulsory.
 (2) Figure to right indicates total marks of question.

Q-1 Choose the correct option for the following: 1 × 8

1. The drug had a calming effect on all animals is known as:
 - a. Tranquilizer
 - b. Analgesic
 - c. Symptomatic
 - d. None
2. Motor system disorder of the nervous system which is outlined as a progressive disorder that affects movement and results in the loss of dopamine-producing brain cells:
 - a. Alzheimer
 - b. Parkinson's disease
 - c. Hyperthyroidism
 - d. Hypoglycemia
3. Medicines that boost brain activity, increase energy, attention, and alertness, and elevate blood pressure, heart rate and respiratory rate:
 - a. Hyperthyroidism
 - b. Alzheimer
 - c. Muscle relaxant
 - d. CNS stimulants
4. A diverse group of medicines that have the ability to relax or reduce tension in muscle is known as:
 - a. Muscle relaxants
 - b. Hyperthyroidism
 - c. Alzheimer
 - d. CNS stimulants
5. Compound typically are not stored within cells but rather synthesized as required:
 - a. Antipyretics
 - b. Analgesic
 - c. Eicosanoids
 - d. None
6. Substances that reduce fever:
 - a. Analgesic
 - b. antipyretic
 - c. Both can be used
 - d. None
7. Drugs which mimic the action of stimulation of cholinergic receptors and also called as:
 - a. Parasympathomimetics
 - b. Cholinomimetic
 - c. Cholinergic drugs
 - d. All the above
8. A drug that opposes the downstream effects of postganglionic nerve firing in effector organs innervated by the sympathetic nervous system:
 - a. Sympatholytic drug
 - b. Parasympatholytic drug
 - c. Cholinergic drugs
 - d. none

Q-2 Answer the following (Any Seven).

2 × 7

1. Give the uses of Sedatives and hypnotics.
2. Give the stages of anesthesia.

3. Define tranquillizers.
 4. Give the limitation of opioid Analgesics.
 5. Define the Skeletal Muscle relaxants.
 6. Draw the structure of Paracetamol.
 7. Draw the structure of caffeine and also give its uses.
 8. Describe autonomic nervous system.
 9. Define Antipyretic analgesics with suitable example.
- Q-3 A. Give the classification of General anesthetics. Give the metabolism and mode of action of Barbiturates. 6
- B. Write a note on the Tranquillizers. 6
- OR**
- B. Describe the drugs used in Alzheimer's disease 6
- Q-4 A. Give the Classification of CNS stimulants. Describe the mode of action and synthesis of caffeine. 6
- B. Give the general mode of action of Narcotic analgesics and SAR of Morphine. 6
- OR**
- B. Give the classification skeletal muscle relaxants. Give the synthesis and mode of action of Mephensin. 6
- Q-5 A. Give the Classification of NSAID and also describe the SAR of Salicylates. 6
- B. Give the general structure of PG, its mode of action and side effect. 6
- OR**
- B. Give the synthesis and metabolism of: 6
- i. Celecoxib
 - ii. Ibuprofen
- Q-6 A. Give the synthesis of Epinephrine and describe the structure activity relationship of sympathomimetic. 6
- B. Give the synthesis and mode of action of atropine. 6
- OR**
- B. Elaborate the parasympathomimetic drugs? Give the synthesis of Acetylcholine and its mechanism of action. 6

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Sardar Patel University

M. Sc. Pharmaceutical Chemistry, Third Semester Examination

Wednesday, 8th November, 2017

02:00 a.m. – 05:00 p.m.

PS03CPCH03: Spectroscopic Techniques for Quality Control

Note:

Max Marks: 70

1. Figures to the right indicate marks.
2. Draw neat and labeled diagram, wherever necessary.

Q-1 Attempt the followings

[08 X 01 = 08]

1. A molecule can absorb IR frequency only if its absorption causes a change in its
 - a) Electric dipole
 - b) Magnetic dipole
 - c) Both a & b
 - d) None
2. Induced magnetic field in NMR reinforces the applied magnetic field causing
 - a) Shielding of proton
 - b) Deshielding of proton
 - c) Shielding of electron
 - d) Deshielding of electron
3. In Mass spectra, the pattern of $M : M+2 :: 100 : 98$ indicates the presence of
 - a) 2 Br
 - b) 1 Cl
 - c) 2 Cl
 - d) 1 Br
4. The correct order for the basic features of a mass spectrometer is
 - a) Acceleration, deflection, detection, ionisation
 - b) Ionisation, acceleration, deflection, detection
 - c) Acceleration, ionisation, deflection, detection
 - d) Acceleration, deflection, ionisation, detection
5. _____ identifies the functional groups present in the sample
 - a) NMR
 - b) Mass spectra
 - c) FTIR
 - d) None of these
6. Which of the following molecule show fluorescence
 - a) Nucleic acid
 - b) Quinine sulphate
 - c) Ammonium sulphate
 - d) None of these
7. In order to perform proton NMR, the sample is prepared in deuterated solvent in order to
 - a) get higher signal to noise ratio
 - b) make protons resonate
 - c) increase reactivity of protons
 - d) None of these
8. Sigma bonded electrons absorb
 - a) Visible rays
 - b) UV rays
 - c) X - rays
 - d) γ - rays

Q-2 Answer the following questions (Any seven).

[07 X 02 = 14]

1. Compare the component of UV and Visible spectrometer.
2. Classify different analytical methods.
3. What is Mull technique?
4. Explain bathochromic and hypsochromic shifts.
5. Discuss the source of radiation used in NMR.
6. Why TMS is used as internal reference in NMR spectroscopy?
7. Differentiate between fragment ion and daughter ion.
8. Define Beer's law.
9. Enlist the different types of analyzer used in mass spectroscopy.

①

(P.T.O)

- Q-3 (A) Explain the properties of electromagnetic radiation. [06]
 (B) Discuss in detail on automizers used in atomic absorption spectroscopy. [06]

OR

- (B) Draw neat and labeled schematic diagram of fluorimeter and explain. [06]

- Q-4 (A) Write a note on flame emission spectroscopy. [06]
 (B) Describe the different types of monochromator used in UV-Visible spectroscopy. [06]

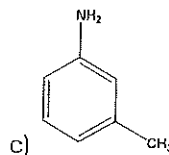
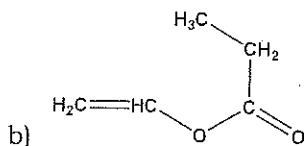
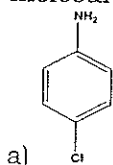
OR

- (B) Discuss the various applications of UV-Visible spectrometry. [06]

- Q5 (A) Discuss the types, characteristics and importance of vibrations observed in IR spectroscopy. [06]
 (B) Describe the spin-spin coupling of NMR in detail [06]

OR

- (B) Giving reasons calculate the ^1H NMR chemical shift of the following molecules [06]



- Q6 (A) Derive the equation $m/z = B^2r^2/2V$ in Mass spectrometry [06]
 (B) Determine the molecular formula of compound by given molecular fragment data [06]

	M	M+1
m/z	142	143
Abundance	100	1.14

OR

- (B) What is mass spectroscopy? Discuss the EI method for obtaining the spectrum by mass spectroscopy with suitable example. [06]

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SARDAR PATEL UNIVERSITY

M.Sc. Pharmaceutical Chemistry, Third Semester Examination

Friday, 10th November

2017

2.00 p.m. to 5.00 p.m.

Advance Pharmaceutical Chemistry: PS03EPCH01

Total Marks : 70

Note : (i) All questions are to be attempted. (ii) Figures to the right indicate marks.

Q.1 Choose the correct option for the following:

[08]

- (i) Which route of administration of a drug results in 100 % bioavailability ?
(a) oral (b) topical (c) parenteral (d) rectal
- (ii) Drug solubility can be enhance by
(a) micro ionization (b) emulsion formation (c) salt formation (d) both 'a' & 'b'
- (iii) The Ozone disinfection
(a) promotes pyrogens (b) kills water borne organisms
(c) filtration process (d) none
- (iv) Gamma-rays are used to sterilize antibiotic, hormones, sutures, plastics and catheters etc, which is obtained from
(a) Cobalt 90 (b) Cobalt 80 (c) Uranium 90 (d) Cobalt 60
- (v) An increase in fluid intake over fluid output, and occurs when the increase in the volume of body fluids is due to water alone is called
(a) over dosage (b) hypotonic expansion (c) both 'a' & 'b' (d) none
- (vi) Pilot plant studies include the close examination of the formula to determine
(a) process modification (b) cost factor (c) both 'a' & 'b' (d) none
- (vii) A dry powder blend that cannot be directly compressed because of poor flow or compression properties is known as
(a) slugging (b) capsuling (c) gelling (d) chipping
- (viii) Which type of plastics are commonly used for pharmaceutical products ?
(a) polyethylene (b) polypropylene (c) PVC (d) all

Q.2 Answer the following : (Attempt any seven)

[14]

- (i) Define systemic and relative bio availability.
- (ii) Explain the various parameter used in bioavailability determination by plasma level study.
- (iii) What is the objective of Sewage treatment ?
- (iv) Describe the parameters which are influencing D-Value.
- (v) What is pilot plant ?
- (vi) What the processes must be included for transferring research to QA department ?
- (vii) Distinguish : Quality control and quality assurance.
- (viii) Write main function of QC department of Pharmaceutical Industry.
- (ix) Write disadvantage of use of plastic containers.

(PTO)

Q.3 Answer the following :

[A] Define bioequivalence. Discuss in detail about bioequivalence experimental study design. [06]

[B] Discuss experimental study design for bioavailability measurement. [06]

OR

[B] Discuss various methods for bioavailability enhancement via drug permeability factor. [06]

Q.4 Answer the following :

[A] Discuss evaluation and in Process Monitoring of Sterilization procedures. [06]

[B] Describe the biological water treatment process. [06]

OR

[B] Write a note on Reverse osmosis. [06]

Q.5 Answer the following :

[A] Describe the Pilot Plant design for Tablets. [06]

[B] Give the methods for scale up for biotechnology derived products. [06]

OR

[B] How will you meet the requirement of Scaling-up of powder blending operations? [06]

Q.6 Answer the following:

[A] Discuss in detail about main function of quality assurance department of industry. [06]

[B] Describe advantages and limitation of metal containers in pharmaceutical industry. [06]

OR

[B] Write a note on: Glass as packaging material in pharmaceutical industry. [06]

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