

***SCHEME OF EXAMINATION
AND
SYLLABUS***

(for the Academic Session 2019-2020)

M.Sc. (Final) Pharmaceutical Chemistry

**Master of Science (M.Sc.)
Pharmaceutical Chemistry**

Faculty of Science



UNIVERSITY OF KOTA

MBS Marg, KOTA (Rajasthan)-324 005

INDIA

M.Sc. Pharmaceutical Chemistry

Scheme of Examinations

M.Sc. (Previous) Pharmaceutical Chemistry

Paper Scheme

Paper-I	Biostatistics and Computer
Paper-II	Quantitative Analytical Method
Paper-III	Stereochemistry and Reaction Mechanism
Paper-IV	Chemistry of Natural Products
Paper-V	Basic Pharmacology
Paper-VI	Biochemistry
Paper-VII	Practical

M.Sc. (Final) Pharmaceutical Chemistry

Paper Scheme

Paper-I	Modern Analytical Chemistry
Paper-II	Drug delivery System & Biopharmaceutics
Paper-III	Chemotherapeutic Agents
Paper-IV	Pharmacodynamic Agents
Paper-V	Drug Design
Paper-VI	Practical
Paper-VII	Project

M.Sc. Pharmaceutical Chemistry

Syllabus

M.Sc. (Final) Pharmaceutical Chemistry

Paper Scheme

Paper-I	Modern Analytical Chemistry
Paper-II	Drug delivery System & Biopharmaceutics
Paper-III	Chemotherapeutic Agents
Paper-IV	Pharmacodynamic Agents
Paper-V	Drug Design
Paper-VI	Practical
Paper-VII	Project

Paper-I (PC-501): Modern Analytical Methods

Duration of Exam.: 3 Hrs.

Max. Marks 100

Unit I

Colorimetry: Methods of color measurements or comparison, instrumentation, spectrofluorometry: instrumentation and application
Atomic absorption and flame emission spectroscopy: Theory instrumentation, atomic absorption spectrophotometers, atomic fluorescence, selected determination.

Unit II

Principal techniques, instrumentation, and application, interpretation of UV spectrophotometry and IR spectrophotometry, optical rotation its significance, instrumentation, dispersion terminology, plain curve, rotatory dispersion and circular dichorism.

Unit III

Mass spectroscopy: Principal, technique, instrumentation, fragmentation, pattern, structural elucidation of compounds. chromatography : principal of separation, application of the technique, adsorption partition, paper, TLC, HPTLC, HPLC, GLC, IEC and gel electrophoresis

Unit IV

PMR : principal, technique, instrumentation, NMR signals, chemical shifts, spin spin coupling, shielding deshielding effect, diamagnetic anisotropy, geminal coupling AMX, ABX and ABC systems, shifts reagents and interpretation of spectra, C13 NMR : interpretation of data.

Unit V

Application of spectroscopic techniques to structural elucidation, introduction to spectral interpretation exercises, microbiological assay and their principal, assays of vitamins and antibiotics .

***Paper-II (PC-502):
Drug Delivery System & Biopharmaceutics***

Duration of Exam.: 3 Hrs.

Max. Marks 100

Unit I

Types, advantages, disadvantages and formulation of oral dosage forms including:

- a. liquid dosage form like solution, syrups, suspensions and emulsion.
- b. tablet
- c. capsules

Unit II

Types, advantages, disadvantages and formulation of parenteral dosage forms and topical semisolid dosage forms. quality control of various dosage form.

Unit III

Controlled release drug delivery system, advantages, drug properties, relevant of controlled release formulation oral dosage form diffusion system, dissolution system, osmotic pump ion exchange resin and prodrug parenteral dosage form : intramuscular injection and implants .

Unit IV

Disintegration : time , factors affecting , dissolution : models, factor affecting, correlation with bioavailability, factor affecting drug absorption including physical, chemical, biological and pharmaceutical, passive diffusion and active diffusion .

Unit V

Drug disposition : distribution in blood, plasma protein binding, cellular distribution, drug excretion, biotransformation of drugs.

Bioavailability: concept and comparison, method of estimation and bioequivalence studies.

***Paper-III (PC-503):
Chemotherapeutic Agents***

Duration of Exam.: 3 Hrs.

Max. Marks 100

Synthesis of pharmacopoeial IP, BP, drugs with SAR studies and medicinal uses.

Unit I

Sulphonamides, penicillins, semisynthetic penicillin

Unit II

Cephalosporin, tetracyclins and aminoglycosides antibiotics.

Unit III

Antimicrobial agents, anti tb and antileprosy and antimalarials.

Unit IV

Antiamoebic, and antiprotozoal, antihelminthes, antifungal .

Unit V

Anticancer, antiviral.

***Paper IV(PC-504):
Pharmacodynamic Agents***

Duration of Exam.: 3 Hrs.

Max. Marks 100

Study of chemistry SAR and mechanism of following classes of drugs :

Unit I

Drug acting on CVS: antihypertensive, antiarrhythmic, antianginal, antihyperlipidemic agents and diuretics.

Unit II

Analgesics, narcotics and non-narcotics, antipyretics, anti-inflammatory, antigout drugs ,

Unit III

Drug acting on CNS: hypnotics and sedatives, general anesthetics , antiepileptics .

Unit IV

Psychotropic agents: antidepressants, antiparkinsonia agents, hypoglycemic drugs, antithyroid.

Unit V

Antihistamins: H1 and H2 antagonist, antiserotonins, carbohydrates based drugs, oligonucleotides.

***Paper-V (PC-505):
Drug Design***

Duration of Exam.: 3 Hrs.

Max. Marks 100

Unit I

Dose response curve , concept of agonist, partial agonist, antagonist, partial antagonist, competitive and non-competitive antagonist, drug metabolism.

Unit II

Specific and non specific drug action, concept of receptor, drug receptor interaction, receptor theories, receptor ion channels.

Unit III

Topographic receptor, adrenergic, cholinergic, H1 and H2 steroidal serotonin, diazepam, opioid receptors.

Unit IV

Drug metabolism approach to drug design, concept of isosterism and bioisosterism, metabolite antagonist, stereochemistry and drug action analog design, concept of prodrug.

Unit V

Introduction to QSAR, chemical information computing system in drug discovery, molecular modeling drug action.

***Paper-VI (PC-506):
Practical***

1. to determine the acid value of mustard oil
2. to determine the saponification value of mustard oil
3. to determine iodine value of mustard oil
4. assay of acetic acid
5. assay of borax
6. assay of paracetamol tablets
7. assay of aspirin tablets
8. assay of iodine
9. assay of dicyclophenax sodium tablets
10. assay of dicyclophenax sodium injection
11. assay of phenol
12. assay of sodium hydroxide
13. assay of ibuprofen tablets
14. assay of chlormphenicol capsules
15. assay of diazepam tablets
16. determination absorption maxima and test the validity of lambert beer's law
17. assay of ascorbic acid
18. assay of ibuprofen and paracetamol in combination
19. assay of theophylline tablets (i.p.)
20. assay of theophylline tablets (b.p.)
21. assay of calcium gluconate injection
22. to evaluate ph of given paracetamol tablet

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