HINDU COLLEGE OF PHARMACY (AUTONOMOUS)

Amaravathi Road – GUNTUR -522002. A.P.

Regd. No: …… **MPA/MPC/MPL-101T**

Total No. of Questions: 14 **Total No. of Pages: 2**

I/II M. Pharmacy Regular Degree 1st Semester end Theory Examinations
April, 2026 - (Admitted in 2025-2026 Autonomous Batch)

Common Paper for
Pharmaceutical Analysis/Pharmaceutical Chemistry/ Pharmacology

Subject Code & Name: MPA/MPC/MPL-101T Modern Pharmaceutical Analytical Techniques.

Time Duration: 3.00 Hrs. **Max. Marks: 75 Marks.**

CO1	The analysis of various drugs in single and combination dosage forms
CO2	To Determine the Compounds by Spectroscopy Techniques.
CO3	To Determine the compounds by Chromatography Techniques.
CO4	To Determine the Compounds by Electrochemical and thermal methods.
CO5	To Interpret the Compounds by various analytical Techniques.

Bloom's Taxonomy Levels-(BL) (L1-Remembering, L2-Understanding, L3–Applying, L4-Analysing, L5–Evaluating, L6-Creating)

SECTION – A

ANSWER ANY FIVE QUESTIONS **(5 X 10M = 50 Marks)**

Q. No.	Questions	Marks	CO	BL
1	Explain the construction and working of the UV-Visible spectrophotometer with a neat diagram. Discuss pharmaceutical applications and solvent effects.	10	CO1	L3
2	Describe the NMR spectroscopy principle. Explain chemical shift, spin-spin coupling, and coupling constant with examples and pharmaceutical applications.	10	CO2	L3
3	Discuss ionization techniques in mass spectroscopy (EI, ESI, MALDI). Explain quadrupole and TOF analyzers with diagrams.	10	CO2	L4
4	Define chromatographic parameters affecting resolution. Explain the HPLC principle, instrumentation, and applications with a flow diagram.	10	CO3	L4
5	Describe capillary electrophoresis and isoelectric focusing with labelled diagrams. Discuss separation factors.	10	CO3	L4
6	Explain the DSC principle and instrumentation. Discuss pharmaceutical applications and error sources.	10	CO4	L3
7	a) Compare Flame Emission Spectroscopy and Atomic Absorption Spectroscopy. b) Explain potentiometry with ion-selective electrodes and applications.	10	CO5	L4

SECTION – B

ANSWER ANY FIVE QUESTIONS **(5 X 5M = 25 Marks)**

Q. No.	Questions	Marks	CO	BL
8	Write a note on the FTIR spectrometer and vibrational frequency factors.	5	CO1	L3
9	Explain the role of solvents in NMR and the nuclear Overhauser effect (NOE).	5	CO2	L3
10	Describe mass fragmentation rules and metastable ions.	5	CO2	L4
11	Differentiate TLC and HPTLC with applications.	5	CO3	L3
12	State Bragg's law. Explain the X-ray powder diffraction technique.	5	CO3	L3
13	Write a short note on TGA and its advantages.	5	CO4	L3
14	Enlist spectrofluorimetry quenchers. Differentiate DTA and DDTA.	5	CO5	L4

****All the Best ****

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Regd. No: …… **MPA-102T**

Total No. of Questions: 14 **Total No. of Pages: 02**

I/II M. Pharmacy Regular Degree 1st Semester end Theory Examinations April, 2026 - (Admitted in 2025-2026 Autonomous Batch)
Pharmaceutical Analysis Specialization

Subject Code & Name: MPA-102T Advanced Pharmaceutical Analysis.

Time Duration: 3.00 Hrs. **Max. Marks: 75 Marks.**

CO1	1. Analysis of Impurities in drugs, residual solvents etc.
CO2	2. Stability studies of drugs and biological products.
CO3	3. Impurity profiling and degradant characterization
CO4	4. Biological tests and assays
CO5	5. Appropriate analytical skills required for the analytical method development

Bloom's Taxonomy Levels-(BL) (L1-Remembering, L2-Understanding, L3–Applying, L4-Analysing, L5–Evaluating, L6-Creating)

SECTION – A

ANSWER ANY FIVE QUESTIONS **(5 X 10M = 50 Marks)**

Q. No.	Questions	Marks	CO	BL
1	Classify impurities in drug substances per ICH guidelines. Discuss quantification methods for organic impurities and residual solvents.	10	CO1	L4
2	Explain elemental impurity classification, control strategies, and analytical procedures including C,H,N,S analysis.	10	CO1	L4
3	Describe impurity profiling, degradant characterization, method development, validation, and ICH photostability guidelines.	10	CO3	L5
4	Discuss stability testing protocols for phytopharmaceuticals including regulatory requirements and HPTLC/HPLC fingerprinting.	10	CO2	L5
5	Detail principles and procedures for biological assays of Adsorbed Tetanus vaccine, Rabies vaccine, and PCR studies.	10	CO4	L3
6	Elaborate on immunoassay principles, antibody production, and separation techniques with examples of Enzyme IA and Radioimmunoassay.	10	CO4	L4
7	Compare stability testing protocols for conventional drugs vs. phytopharmaceuticals, highlighting influencing factors like pH and temperature.	10	CO2	L5

SECTION – B

ANSWER ANY FIVE QUESTIONS **(5 X 5M = 25 Marks)**

Q. No.	Questions	Marks	CO	BL
8	Short note on ICH reporting levels for residual solvents and degradation products.	5	CO1	L2
9	Write sources and identification of elemental impurities.	5	CO1	L2
10	List different stability zones and accelerated stability testing.	5	CO2	L3
11	Explain HPTLC/HPLC fingerprinting for phytopharmaceutical stability.	5	CO2	L2
12	Write the principle and procedure for Heparin sodium IP assay.	5	CO4	L2
13	Basic principles of Fluoro Immuno Assay (IA) and Luminiscence IA.	5	CO4	L2
14	Shelf-life calculation methods and ICH guidelines for biological products.	5	CO3	L3

****All the Best ****

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Regd. No: …… **MPA-103T**

Total No. of Questions: 14 **Total No. of Pages: 2**

I/II M. Pharmacy Regular Degree 1st Semester end Theory Examinations April, 2026 - (Admitted in 2025-2026 Autonomous Batch) Pharmaceutical Analysis Specialization

Subject Code & Name: MPA-103T Pharmaceutical Validation

Time Duration: 3.00 Hrs. **Max. Marks: 75 Marks.**

CO1	Student achieves the knowledge completely on the aspect of validation.
CO2	The student learns the concept of Patent and Intellectual property rights.
CO3	Student is trained to carry out qualification aspects of instruments.
CO4	Student is taught calibration procedure to be performed for the instruments.
CO5	Student is trained on validation procedures to be carried out for instrument validation, cleaning validation and manufacturing process validation.
CO6	Student achieves knowledge completely on the aspects of validation of utility systems.

Bloom's Taxonomy Levels-(BL) (L1-Remembering, L2-Understanding, L3–Applying, L4-Analysing, L5–Evaluating, L6-Creating)

SECTION – A

ANSWER ANY FIVE QUESTIONS **(5 X 10 M = 50 Marks)**

Q. No.	Questions	Marks	CO	B L
1	Explain the entire qualification process for a pharmaceutical equipment with a neat flow diagram?	10	3	L4
2	Explain in detail the qualification and calibration of laboratory glassware like Volumetric flask, Pipette, Measuring cylinder, Burette?	10	4	L4
3	Describe in detail the validation of utility systems and cleaning validation in pharmaceutical industries?	10	5	L3
4	Explain analytical method validation and computerized system validation with regulatory requirements?	10	1	L4
5	Explain the process of filing a patent application with forms and guidelines?	10	2	L4
6	Discuss Intellectual Property Rights, patent filing, infringement, and ethical issues in pharmaceutical industries?	10	2	L3
7	Explain the significance of Technology Transfer (TOT) in pharma industries?	10	1	L4

SECTION – B

ANSWER ANY FIVE QUESTIONS **(5 X 5 M = 25 Marks)**

Q. No.	Questions	Marks	CO	B L
8	Define Qualification and Validation with examples and Write the advantages of validation in pharmaceutical industries?	5	2	L2
9	Write short notes on Factory Acceptance Test (FAT) & Site Acceptance Test (SAT)?	5	5	L2
10	Write a note on FTIR instrument qualification	5	3	L2
11	What are the stages involved in utility validation?	5	6	L3
12	Write short notes on ICH guidelines for validation?	5	1	L2
13	Differentiate between patent, copyright, and trademark?	5	2	L3
14	Write a short note on the economic importance of IPR?	5	2	L2

****All the Best ****

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Regd. No: …… **MPA-104T**

Total No. of Questions: 14 **Total No. of Pages: 02**

I/II M. Pharmacy Regular Degree 1st Semester end Theory Examinations
April, 2026 - (Admitted in 2025-2026 Autonomous Batch)
Pharmaceutical Analysis Specialization

Subject Code & Name: MPA-104T Food Analysis.

Time Duration: 3.00 Hrs. **Max. Marks: 75 Marks.**

CO1	To understand various analytical techniques in the determination of Carbohydrates, Proteins and other food constituents.
CO2	To understand various analytical techniques in the determination of Lipids, Vitamins and other food constituents.
CO3	To understand various analytical techniques in the determination of Food additives.
CO4	To understand various analytical techniques in the determination of milk, milk constituents, milk products and fermentation products.
CO5	To understand various analytical techniques in the determination of pesticides and also knowledge on food regulations and legislations

Bloom's Taxonomy Levels-(BL) (L1-Remembering, L2-Understanding, L3–Applying, L4-Analysing, L5–Evaluating, L6-Creating)

SECTION – A

ANSWER ANY FIVE QUESTIONS **(5 X 10M = 50 Marks)**

Q. No.	Questions	Marks	CO	BL
1	Classify carbohydrates and explain their properties and functions in food?	10	CO1	L4
2	A) Describe the general methods of analysis of fats and oils. B) Describe the methods of analysis of vitamins in detail?	10	CO2	L2
3	Discuss the importance, advantages, and safety concerns of food additives?	10	CO3	L4
4	Discuss the common adulterants and contaminants in milk and methods for their detection?	10	CO4	L4
5	Explain the role of analytical methods in ensuring safety and quality of dairy and fermented products?	10	CO4	L5
6	Explain the combined role of pesticide control and regulatory bodies (BIS, AGMARK, FDA, US-FDA) in maintaining food quality standards?	10	CO5	L5
7	Describe the analysis of organophosphorus and organochlorine pesticides?	10	CO5	L2

SECTION – B

ANSWER ANY FIVE QUESTIONS **(5 X 5M = 25 Marks)**

Q. No.	Questions	Marks	CO	BL
8	Explain the general methods of analysis of carbohydrates?	5	CO1	L5
9	Describe physico-chemical properties of proteins?	5	CO1	L2
10	Classify lipids & vitamins with examples?	5	CO2	L4
11	Explain flavors and flavor enhancers and Write a note on artificial sweeteners?	5	CO3	L5
12	Write a short note on analysis of milk constituents (fat, protein, lactose)?	5	CO4	L3
13	List the parameters analyzed in fermented products?	5	CO4	L4
14	Classify pesticides with examples?	5	CO5	L4

****All the Best ****