THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

**[LL 991]** NOVEMBER 2017 **Sub. Code: 2991**

**M.PHARM. DEGREE EXAMINATION**
**(PCI New regulations 2016)**
**SEMESTER-I**
**PHARMACOGNOSY – MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P.Code: 262991***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Explain theory of fluorescence with the help of Jablonski diagram. Write the factors affecting fluorescence.

2. Write the principle, instrumentation, and applications of HPLC.

**II. Write notes on:** **(7 x 5 = 35)**

1. HPTLC principle and applications.
2. Predict the splitting pattern for ethanol in $^{1}$HNMR.
3. Give the fragmentation pattern for 1-butene.
4. Principle and pharmaceutical application of DSC.
5. MALDI.
6. Factors influencing chemical shift.
7. Sample handling techniques in IR.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

**[LM 991]** MAY 2018 **Sub. Code: 2991**

**M.PHARM. DEGREE EXAMINATION**
**(PCI New regulations 2016)**
**SEMESTER-I**
**PHARMACOGNOSY – MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P.Code: 262991***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Explain the different Modes of Molecular Vibrations, sample handling and applications of IR Spectroscopy.

2. Discuss various Ionization Techniques used in Mass Spectroscopy and give the Fragmentation rules.

**II. Write notes on:** **(7 x 5 = 35)**

1. Ion exchange chromatography.
2. Predict the splitting pattern for 1, 1-Dichloro ethane in $^{1}$HNMR.
3. Give the fragmentation pattern for 2-methly pentane.
4. Principle and pharmaceutical applications of TGA.
5. Quadrupole analyzer.
6. Beer-Lambert's Law.
7. Coupling constant.

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THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

**[LO 991]** MAY 2019 **Sub. Code: 2991**

**M.PHARM. DEGREE EXAMINATION**
**(PCI New regulations 2016)**
**SEMESTER-I**
**PHARMACOGNOSY – MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P.Code: 262991***

**Time: Three hours** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Explain the construction and working of a Double beam UV-Spectrophotometer.

2. Write the principle, instrumentation, chromatographic parameters and applications of Gas Chromatography.

**II. Write notes on:** **(7 x 5 = 35)**

1. Gel Filtration Chromatography.
2. Predict the splitting pattern for 1, 1, 2 tri bromo ethane in $^{1}$HNMR.
3. Give the fragmentation pattern for n-octane.
4. Principle and Pharmaceutical applications of DTA.
5. Time of flight analyzer.
6. Quenching.
7. Spin-Spin coupling.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[LQ 0121] JANUARY 2021 Sub. Code: 2991**

**(APRIL 2020 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**

**SEMESTER-I (PCI New regulations 2016)**

**PHARMACOGNOSY – MPG**

**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code : 262991***

**Time : Three hours Answer ALL Questions Maximum : 75 Marks**

**I. Elaborate on: (2 x 20 = 40)**

1. a) Discuss the principle and instrumentation of Nuclear Magnetic resonance Spectroscopy.
   b) Predict the Splitting Pattern for ethanol and 1,1',2-tribromoethane in 1H-NMR.

2. a) Explain the principle and working of High Performance Liquid Chromatography.
   b) Explain the working principle of any two detectors used in Gas Chromatography.

**II. Write notes on: (7 x 5 = 35)**

1. Deduce the Mass interpretation Patterns for (i) Benzaldehyde (ii) Benzamide.
2. Describe the working principle of and instrumentation of TGA.
3. Discuss about the choice of solvent and solvent effect in UV-Visible Spectroscopy.
4. With examples explain the factors affecting fluorescence intensity.
5. Outline the principle and the interferences involved in Flame emission Spectroscopy.
6. Briefly explain the principle and applications of Gel electrophoresis.
7. Explain the rotating crystal technique with a neat labeled diagram.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[MPHARM 0422] APRIL 2022 Sub. Code: 2991**
**(OCTOBER 2021 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER-I (PCI New regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**
***Q.P. Code : 262991***

**Time : Three hours Answer ALL Questions Maximum : 75 Marks**

**I. Elaborate on: (2 x 20 = 40)**

1. a) Explain the construction and working of double beam UV-Vis Spectrophotometer with a neat diagram.
   b) Write in detail about the principle and instrumentation of double beam Spectrofluorimeter.

2. a) Write theory of Fluorescence with neat diagram.
   b) Explain the relationship between:
   (i) Chemical structure and Fluorescent intensity.
   (ii) pH and Fluorescent intensity.

**II. Write notes on: (7 x 5 = 35)**

1. Write the principle involved in atomic absorption Spectroscopy.
2. Explain the sample handling techniques in Infra red Spectroscopy.
3. Explain the terms: a) Chemical shift b) Spin-Spin coupling.
4. Write the applications of differential Scanning Calorimetry.
5. Write an account on detectors used in HPLC.
6. Explain the application and various interferences occurring in Flame emission spectroscopy.
7. Write a note on Bragg's law and application of X-ray diffraction technique.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 0922]** **SEPTEMBER 2022** **Sub. Code: 2991**
**(APRIL 2022 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code : 262991***

**Time : Three hours** **Answer ALL Questions** **Maximum : 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Explain the principle, instrumentation and application of IR spectroscopy.

2. Explain different types of detectors used in HPLC.

**II. Write notes on:** **(7 x 5 = 35)**

1. Types of electronic transitions in UV spectroscopy.
2. Instrumentation of gel electrophoresis.
3. Principle and application of TGA.
4. Development techniques in paper chromatography.
5. Solvents used in NMR.
6. Ionization techniques in mass spectroscopy.
7. Application of X-ray diffraction.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 0423] APRIL 2023 Sub. Code: 2991**
**(OCTOBER 2022 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code: 262991***

**Time : Three hours** **Answer ALL Questions** **Maximum : 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. Explain the principle, instrumentation and application of flame emission.

2. Explain the principle, instrumentation and application of HPTLC.

**II. Write notes on:** **(7X5 = 35)**

1. Time of flight mass analyzer in mass spectroscopy.
2. Type of quenching in flourimetry.
3. Resins used in ion exchange chromatography.
4. Instrumentation of capillary electrophoresis.
5. Application of potentiometry.
6. Instrumentation of Atomic absorption spectroscopy.
7. Derive bragg's law.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 0823] AUGUST 2023 Sub. Code: 2991**
**(APRIL 2023 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New Regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code: 262991***

**Time : Three hours** **Answer ALL Questions** **Maximum : 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. a) Explain the principle and methodology of Differential Thermal Analysis (DTA).
   b) Discuss the working principle and instrumentation of HPTLC (High Performance Thin layer Chromatography).

2. a) Explain the construction and working principle of Time of flight of mass analyser.
   b) Explain in detail with examples the fragmentation pattern of organic compounds by mass spectroscopy.

**II. Write notes on:** **(7 x 5 = 35)**

1. Discuss the theory involved in fluorescence with the help of Jablonski diagram.
2. With a neat diagram explain the construction and working of Hollow cathode lamp and Photomultiplier tube.
3. Explain normal phase, reverse phase and two dimensional chromatography.
4. Write short notes on Quenching.
5. Explain the various development techniques and applications of paper chromatography.
6. How X-rays are generated? Briefly explain X-ray powder diffraction method.
7. Write an account on mass analyzers.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 0524] MAY 2024 Sub. Code: 2991**
**(APRIL 2024 EXAM SESSION)**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New Regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code: 262991***

**Time: Three hours** **Answer ALL Questions** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. a) Explain the principle and instrumentation of fluorimetry.
   b) Explain the different applications of fluorimetry.

2. Explain the principle, instrumentation and application of mass spectroscopy.

**II. Write notes on:** **(7 x 5 = 35)**

1. Types of vibrations in IR spectroscopy.
2. Interferences of atomic absorption spectroscopy.
3. Instrumentation of TGA.
4. Preparation of TLC plates.
5. Chemical shift in NMR.
6. Principle and application of paper electrophoresis.
7. Application of HPLC.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 0425]** **APRIL 2025** **Sub. Code: 2991**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New Regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code: 262991***

**Time: Three hours** **Answer ALL Questions** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. a) Explain in detail the theory and instrumentation of NMR spectrometer.
   b) Give a detail note on deuterium exchange reactions and Nuclear Overhauser Effect.

2. Write the principle, instrumentation and applications of HPLC.

**II. Write notes on:** **(7 x 5 = 35)**

1. HPTLC principle and applications.
2. Principle and pharmaceutical application of DSC.
3. Briefly explain the principle and applications of Gel electrophoresis.
4. Sample handling techniques in IR.
5. Quadrupole analyzer.
6. Principle and pharmaceutical applications of TGA.
7. Quenching.

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**THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY**

**[M.PHARM 1025]** **OCTOBER 2025** **Sub. Code: 2991**

**M.PHARMACY DEGREE EXAMINATION**
**SEMESTER - I (PCI New Regulations 2016)**
**PHARMACOGNOSY - MPG**
**PAPER I – MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

***Q.P. Code: 262991***

**Time: Three hours** **Answer ALL Questions** **Maximum: 75 Marks**

**I. Elaborate on:** **(2 x 20 = 40)**

1. a) Explain the construction and working of double beam UV-Vis Spectrophotometer with a neat diagram.
   b) Write in detail about the principle and instrumentation of double beam Spectrofluorimeter.

2. Explain the principle, instrumentation and application of flame emission.

**II. Write notes on:** **(7 x 5 = 35)**

1. Instrumentation of capillary electrophoresis.
2. Derive Bragg's law.
3. Ionization techniques in mass spectroscopy.
4. Development techniques in paper chromatography.
5. Deduce the Mass interpretation Patterns for (i) Benzaldehyde (ii) Benzamide.
6. Principle and pharmaceutical applications of TGA.
7. Predict the splitting pattern for 1, 1-Dichloro ethane in 1HNMR.

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