

3. **THE NORMAL FLORA:** Microbiology of air, water and soil (general introduction and normal inhabitants of air, water and soil).
4. **INDUSTRIAL MICROBIOLOGY:** Introduction to Sterilization/ Disinfection. Fermentation. Pharmaceutical products Produced by fermentation process (Penicillins, Cepalosporins, Gentamycin, Erythromycin, Tetracyclines, Rifamycin, Griseofulvin).
5. **IMMUNOLOGY:** Introduction and types of Immunity: Specific and non-specific (Cellular basis of Immune response. Immunity, autoimmunity, tolerance. Antigen. Antibodies). Antigen-Antibody reactions and their clinical and diagnostic applications. Hypersensitivity and allergy. Drug allergy mechanism. Vaccination: Introduction and aims. Types of Vaccines. Current vaccine practices.
6. **FACTORY AND HOSPITAL HYGIENE AND GOOD MANUFACTURING PRACTICES:** Introduction, Control of microbial contamination during manufacture, Manufacturing of Sterile products, A Guide to Current Good Pharmaceutical Manufacturing Practices.
7. **INTRODUCTION TO DISEASES:** Dengue fever, Bird flu, SARS or other prevailing diseases of bacteria and virus.

<b><u>PHARMACEUTICS-III (PHARM. MICROBIOLOGY &amp; IMMUNOLOGY) (Practical)</u></b>
<b><u>Paper 10</u></b> <span style="float: right;"><b><u>Marks 100</u></b></span>

**NOTE:** Practical of the subject shall be designed from time to time on the basis of the above mentioned theoretical topics and availability of the facilities, e.g. Sterilization of Glassware and pharmaceutical products by various methods. Microbiological assays of Anti-biotics and vitamins. Preparation of general and selective Media and culturing of micro-organisms. Total and viable counts of micro-organism. Morphological and selective biochemical characterization of some specimen. Staining of Bacteria: Gram method, Acid fast, Giemasas staining, Capsule staining, Flagella staining and Spore staining. Microbiological analysis of air, water and soil (Note: A minimum of 20 practicals will be conducted).

<b><u>PAKISTAN STUDIES AND ISLAMIYAT (Compulsory) (Theory)</u></b>
<b><u>Paper 5</u></b> <span style="float: right;"><b><u>Marks 100</u></b></span>

**PART: A PAKISTAN STUDIES:**

**40 MARKS**

**1. INTRODUCTION/OBJECTIVES:**

- Develop vision of historical perspective, government, politics, contemporary Pakistan, ideological background of Pakistan.
- Study the process of governance, national development, issues arising in the modern age and posing challenges to Pakistan.

## **2. HISTORICAL PERSPECTIVE:**

- a. Ideological rationale with special reference to Sir Syed Ahmed Khan, Dr. Allama Muhammad Iqbal and Quaid-i-Azam Muhammad Ali Jinnah.
- b. Factors leading to Muslim separatism
- c. People and Land
  - i. Indus Civilization
  - ii. Muslim advent
  - iii. Location and geo-physical features

## **3. GOVERNMENT AND POLITICS IN PAKISTAN:**

Political and constitutional phases:

- a. 1947-58
- b. 1958-71
- c. 1971-77
- d. 1977-88
- e. 1988-99
- f. 1999-onward

## **4. CONTEMPORARY PAKISTAN:**

- a. Economic institutions and issues
- b. Society and social structure
- c. Ethnicity
- d. Foreign policy of Pakistan and challenges
- e. Futuristic outlook of Pakistan

## **PART: B ISLAMIC STUDIES:**

**60 MARKS**

**Course Objectives:** This course is aimed at:

- 1 To provide Basic information about Islamic Studies
- 2 To enhance understanding of the students regarding Islamic Civilization
- 3 To improve Students skill to perform prayers and other worships
- 4 To enhance the skill of the students for understanding of issues Related to faith and religious life.

### **1. Introduction to Quranic Studies:**

- 1) Basic Concepts of Quran
- 2) History of Quran
- 3) Uloom-ul-Quran

### **2. Study of Selected Text of Holly Quran:**

- 1) Verses of Surah Al-Baqra Related to Faith (Verse No. 284-286)
- 2) Verses of Surah Al-Hujrat Related to Adab Al-Nabi (Verse No. 1-18)
- 3) Verses of Surah Al-Mumanoon Related to Characteristics of faithful (Verse No. 1-11)
- 4) Verses of Surah al-Furqan Related to Social Ethics (Verse No. 63-77)
- 5) Verses of Surah Al-Inam Related to Ihkam (Verse No. 152-154)

**3. Study of Selected Text of Holy Quran:**

- 1) Verses of Surah Al-Ihزاب Related to Adab al-Nabi (Verse No. 6, 21, 40, 56, 57, 58)
- 2) Verses of Surah Al-Hashar (18,19,20) Related to thinking, Day of Judgment
- 3) Verses of Surah Al-Saf related to Tafakar, Tadabar (Verse No. 1,14)

**4. Seerat of Holy Prophet (S.A.W) I:**

- 1) Life of Muhammad Bin Abdullah ( Before Prophet Hood)
- 2) Life of Holy Prophet (S.A.W) in Makkah
- 3) Important Lessons derived from the life of Holy Prophet (S.A.W) in Makkah

**5. Seerat of Holy Prophet (S.A.W) II**

- 1) Life of Holy Prophet (S.A.W) in Madina
- 2) Important Events of Life Holy Prophet (S.A.W) in Madina
- 3) Important Lessons Derived from the life of Holy Prophet (S.A.W) in Madina

**6. Introduction to Sunnah:**

- 1) Basic Concepts of Hadith
- 2) History of Hadith
- 3) Kinds of Hadith
- 4) Uloom-ul-Hadith
- 5) Sunnah & Hadith
- 6) Legal Position of Sunnah

**7. Selected Study from Text of Hadith:**

**8. Introduction to Islamic Law & Jurisprudence:**

- 1) Basic Concepts of Islamic Law & Jurisprudence
- 2) History & Importance of Islamic Law & Jurisprudence
- 3) Sources of Islamic Law & Jurisprudence
- 4) Nature of Differences in Islamic Law
- 5) Islam and Sectarianism

**9. Islamic Culture & Civilization:**

- 1) Basic Concepts of Islamic Culture & Civilization
- 2) Historical Development of Islamic Culture & Civilization
- 3) Characteristics of Islamic Culture & Civilization
- 4) Islamic Culture & Civilization and Contemporary Issues

**10. Islam & Science:**

- 1) Basic Concepts of Islam & Science
- 2) Contributions of Muslims in the Development of Science
- 3) Quran & Science

**11. Islamic Economic System:**

- 1) Basic Concepts of Islamic Economic System
- 2) Means of Distribution of wealth in Islamic Economics
- 3) Islamic Concept of Riba
- 4) Islamic Ways of Trade & Commerce

**12. Political System of Islam:**

- 1) Basic Concepts of Islamic Political System
- 2) Islamic Concept of Sovereignty
- 3) Basic Institutions of Govt. in Islam

**13. Islamic History:**

- 1) Period of Khlaft-e-Rashida
- 2) Period of Umayyads
- 3) Period of Abbasids

**14. Social System of Islam:**

- 1) Basic Concepts of Social System of Islam
- 2) Elements of Family
- 3) Ethical Values of Islam

**PHARMACY PRACTICE-I (PHARM. MATHEMATICS AND BIOSTATISTICS) (Theory)**

**Paper 6**

**Marks 100**

**PART A: (PHARMACEUTICAL MATHEMATICS)**

**(40 MARKS)**

**1. ALGEBRA:**

- (a) Solution of Linear and Quadratic Equations: Equations reducible to Quadratic Form. Solution of simultaneous Equations.
- (b) Arithmetic, Geometric and Harmonic Progressions: Arithmetic, Geometric and Harmonic Means.
- (c) Permutations and Combinations:
- (d) Binomial Theorem: Simple application.

**2. TRIGONOMETRY:** Measurement of Angles in Radian and Degrees. Definitions of circular functions. Derivation of circular function for simple cases.

**3. ANALYTICAL GEOMETRY:** Coordinates of point in a plane. Distance between two points in a plane. Locus, Equations of straight line, Equation of Parabola, Circle and Ellips.

**4. DIFFERENTIAL CALCULUS:** Functions, variations in functions, limits, differential coefficient, differentiation of algebraic, trigonometric, exponential and logarithmic functions, partial derivatives. Maxima and minima values. Points of inflexion.