SYLLABUS FOR THE SUBJECT OF VETERINARY SCIENCE
PAPER – I

Total Marks: 100

Anatomy and Physiology

General terms used in Anatomy and Physiology. Anatomy and Physiology of different systems such as Digestive System, Cardiovascular System, Respiratory System, uro-general system, Endocrine Glands, Nervous System, Sense Organs. Comparative Anatomy and Physiology of different systems of various domestic animals.

Pharmacology and Toxicology

Terminology Drug development and drug regulation. Sources of drugs and drugs classification. Physiochemical properties of drugs, Disposition and bioavailability of drugs. Structure activity and dose response relationship, Drug Resistance, Drug safety, adverse effects, tissue residue and public health. Pharmacology of drugs affecting various systems, Chemotherapeutic agents, antibiotics, antifungal, antiviral, antiparasitic drugs. Terms used in toxicology, Forensic toxicology, Sources of poisoning and poisonous plants. Specific and non specific antidote therapy.

Parasitology

Effects of parasites on their host and their economic significance. Immunity and resistance of parasites. Mode of action of anti-parasitic drugs. Parasitic zoonoses examples, Epidemiology, Diagnosis, Pathogenesis and control of various parasites such as Protozoa (Trypanosoma, Toxoplasma, Babesia, Theileria, Coccidia, Etc). Helminthes (Ascariasis, strongylosis, haemonchus, oestertagia, fasciolosis, schistosoma, Ectoparasites (mange, mite, ticks, flies).

Microbiology

Pathology


Reproduction

Regulation of hormones, Physiology of estrous cycle. Fertilization, Implantation, gestation and parturition, male reproductive system. Biotechnology and recent trends. Artificial insemination technique, estrus synchronization, embryo transfer, Genetic engineering, nuclear transfer and cloning. Disease of reproduction, cervicovaginal prolapse, post partum complications, uterine infections, infertility problems, Genetic and acquired abnormalities of testis accessory sex glands and infertility problems in males.

Veterinary Medicine


Surgery

Veterinary Epidemiology


RECOMMENDED BOOKS

Animal Nutrition


Poultry

Development of poultry industry in Pakistan; present status and future potential of poultry industry; important classes, breeds and varieties of poultry and their characteristics; objectives of poultry breeding for meat and egg production; qualitative and quantitative traits and their heritability estimates, systems of breeding and their significance; pure breed vs present day hybrid used for meat and egg production; the role of selection in genetic improvements. Brooding, rearing and laying house equipments; raising of broilers; rearing of layer chicks; shifting and housing of pullets; cage vs floor management; layer and breeder management; causes of poor performance of layer and breeder flocks and development of managerial strategies for its improvement; factors affecting pullet development; basic principles for site selection; poultry house construction and design; requirements of housing from biological engineering, economic and hygienic point of view.

Livestock Management


Animal Breeding and Genetics
Genetic and phenotypic correlation. Emerging techniques. Traits of economic importance in farm animals. Use of computer for data handling and analysis. Breeding systems; random mating, inbreeding, line breeding and out breeding; selection of superior animals, principles, basis, kinds and methods; traits of economic importance in cattle, buffalo sheep, goats and poultry; animal genetic resources, their conservation and preservation; emerging breeding technologies; national breeding policy, constraints and future breeding plans.

RECOMMENDED BOOKS


SYLLABUS FOR THE SUBJECT OF AGRICULTURE
PAPER-I

Total Marks: 100


Indicators and issues of agriculture sector in Pakistan and their role in national economy. Land tenure systems and land reforms in Pakistan. Principles, objectives and functions of WTO. Role of IT in agriculture.

SUGGESTED READINGS

33. WTO. 1999. The Legal Test: The results of the Uruguay round of multilateral trade negotiations. Cambridge, UK.

Concept of modern breeding; doubled haploid breeding, marker-assisted breeding, mutation breeding, heteroplloid breeding, hybrid breeding and transgenic breeding. Various techniques of developing transgenic plants and scope of transgenic plants in plant breeding. Impact of cultivation of transgenic crops on biodiversity. Role of agri-biotechnology in crop improvement. Breeding cultivars for marginal lands. Role of edible oilseeds in agriculture and economy of Pakistan. Development of low erucic acid and glucosinolate (double low) varieties in rapeseed and mustard crops.


Causes, nature of losses and economic importance of plant diseases, and principles of their control. Economic importance, transmission and control of plant viruses. Various methods to control and manage plant diseases. Methods of screening of crop germplasm for the sources of disease resistance. Physiological requirements and problems in mushroom cultivation. nutritional value of mushroom and remedial measures of mushroom poisoning.

Classification, propagation, management practices and post harvest handling of Horticultural crops. Role of tissue culture in agriculture. Cultivation, production, chemical and pharmacological properties of medicinal plants. Propagation methods, management practices and marketing of fruit and ornamental plants nurseries.


32. Soil Survey of Pakistan Reports, Pakistan.
SYLLABUS FOR THE SUBJECT OF ARABIC
PAPER-I

Total Marks: 100

HISTORY OF ARABIC LITERATURE

A: The Pre-Islamic Arabic Literature and its salient features.
B: Al-Quran and its influence on Arabic Literature.
C: Literary movements, Classical Background, Socio-cultural influences and modern trends in Abbasid period and its literary history.
E: Literary movements in Undlus period.
F: Origin of modern literary style and its development, including Drama novel, short story and essay, special emphasis on the literature of Al-Mahjer and its outstanding representatives: Fouzi Almalloof, Jabran Khalil Jabran, Mikhail Nuaima and Ilia Abu Medh.

RHETORIC

A: To explain the meaning of Rhetoric ad its Literary aspects and differentiate them.

LINGUISTICS

A: Arabic Grammar (Mufrad, Musana, Jamaal Murab Wal Madni, Marifah, Nakrah, Marfooat, Mansoobat, Majroorat).
B: A detailed study of history of Arabic Language and its characteristics.
C: Information about the Arab Scholars in the development of various sciences of Arabic Language.

CRITICISM

A: To explain the meaning of criticisms and literature criticism.
B: To give through study of history of criticism in various periods of Pre-Islamic and Islamic history.
**REFERENCE BOOKS**

1. Dr. De Boer  
   The History of Philosophy in Islam
2. Nicolson  
   A History of Arabic Literature
3. Gibbs  
   An introduction to the Arabic Literature
4. W. Wright  
   Arabic Grammar.
PAPER-II

Total Marks: 100

POETRY
1. Maullqat complete
2. (a) hassan Bin Sabbit: The following two Qasaid from his Daiwan: No. 1 “Ma Balu Aineka” No.2“Lillahi Damu Kaaba”
4. Khansa and her Qaisidat “Wa Inna Sakhran Lawalina”
5. Al-Mutanabbi, (his first 5 Qasaid) from Diwan al Mutahli Abu-Tmam, (Bab-Alhimasah)
6. Abu-Tmam, (Bab-Alhimasah)
7. Ahmed Shoque and his poetry Al-Hamziah-il-Annbwiah

PROSE
3. Al-jahiz, “Khutbah Abi Bakr, Khutbah Ali” (Albiyan wal tabyeen)
4. Mahmood Taimoor his novel Anal-Qatil
5. Dr. Taha Hussain, Alwad al haq (Ammar bin Yasir)
6. Dr. Saleem Tariq Khan, Al-Lugha Al-Arbia (I.U.B). B.A
7. Dr. Khaliq Dad Malik, Al-Insha wal Muhadsa.

REFERENCE BOOKS
1. Dr. De Boer The History of Philosophy in Islam
2. Niclson A History of Arabic Literature
3. Gibbs An introduction to Arabic Literature
4. W.Wright Arabic Grammar.
SYLLABUS FOR THE SUBJECT OF BOTANY

PAPER-I

Marks : 100

1. **Algae**: Origin, evolution, distribution and classification with reference to range, structure, life-history, ecology and economic importance of Cyanophyta, Bacillariophyta, Phaeophyta and Rhodophyta, Chlorophyta.

2. **Fungi**: Structure of plant body; development of ascus, basidium and conidium; reproduction; classification; phylogeny, physiology and economic importance of the main groups of fungi. Diseases of economically important plants and their control.

3. **Bryophytes**: Evolution of gametophytes and sporophytes, structure, reproduction, classification and economic importance of various members of Liverworts, Mosses and Hornworts.


5. **Gymnosperms**: General characters, life history and evolutionary tendencies of Cycadophyta, Coniferophyta and Ginkgophyta. Structure of seed.

6. **Angiosperms**:  
   b. **Anatomy**: Cell wall; Tissues and Tissue systems: Meristematic tissue; Epidermal tissue system; Fundamental or ground tissue system; Mechanical tissue system; Xylem and Phloem as Vascular tissue, Collenchyma, Sclerenchyma; Primary and secondary growth; Cambium, Periderm. Anatomy of leaf, stem and root. Abnormal/Anomalous secondary growth, Ecological anatomy.
   c. Embryology: Introduction; alternation of generation; the flower and its parts; stamen or microsporophyll; carpel or megasporophyll; male gametophyte or microgametophyte, pollination and fertilization; endosperm; embryo and its development (embryogenesis); seed and fruit formation; apomixis; polyembryony.
RECOMMENDED BOOKS

PAPER-II

Total Marks: 100


3. **Cytology:** Detailed study of ultra-structure of cell and its components; Chromosomes, Mitosis and meiosis, significance, Cancer and apoptosis.

4. **Genetics:**
   a. **Mendelian Genetics:** Linkage, Crossing over, Sex-linked inheritance, Mutation, Polyploidy.
   b. **Biochemical Genetics:** Biochemical nature of hereditary material, fine structure of genes: Transduction and Transformation.
   c. **Molecular Genetics:** Replication, Transcription, Genetic codes and Translation.

5. **Evolution:** Theories of Evolution, Lamarckism, Darwinism, Neo-Darwinism. Hardy-Weinberg’s Law, Gene frequency, Adaptive mutations.

**RECOMMENDED BOOKS**

SYLLABUS FOR THE SUBJECT OF BUSINESS ADMINISTRATION
PAPER-I
Total Marks: 100

MANAGEMENT

1. Management yesterday and today
   - Historical background of Management
   - Managing in the New Era
     The Internet, Globalization, Knowledge Management and Collaboration across “boundaries”.

2. Planning: Delivering strategic value, the basic planning process, strategic planning, types of plans and decision making.

3. Organizing: Building a dynamic organization, fundamentals of organizing (differentiation & integration), organization structure (vertical & horizontal). Empowerment (Centralization & Decentralization), Coordination by (Standardization by plan & by adjustment). (Human Resource Management; (HRM); Planning, Recruitment, Selection and Training etc).


5. Controlling: Learning and Changing, Basic Control Process, Control Techniques and IT, Organizing for Innovation (Technology, Job Design & HR Development, Project Implementation and Unleashing Creativity)

RECOMMENDED BOOKS


PAPER-II
1. **The Field of Marketing:** Marketing Role and what is it all about: Who Performs Marketing Functions, Marketing and Customer Value, Satisfaction and Loyalty, Global Marketing Systems, 4Ps (Product, Price, Place and Promotion).


3. **Product:** Product Planning and Development, Product line and Product mix strategies, Branding, Packaging, Other Product Features and Services Marketing.

4. **Price:** Price determination (An Ethical Dilemma, Factors Influencing, and Setting Pricing etc.), Pricing Strategies (Price Vs Non Price Competition, Geographic Pricing, Discount & Allowances, Special Pricing Strategies and Situations etc).

5. **Place:** Middlemen and Distribution Channels, Designing, Selecting and Distribution of Channels, Retailing and Wholesaling.

6. **Promotion:** Marketing Communications Mix (Personal Selling, Advertising, Sales Promotion and Publicity or Public Relations).

**RECOMMENDED BOOKS**


Part-II
FINANCIAL MANAGEMENT

Marks: 50

1. **Understanding Financial Management:** An Overview of Financial management, Securities markets and Financial institutions, Concept of Time Value of Money, Valuation of Securities (Stocks and Bonds), Measuring the Risks and Returns.


6. **Corporate Financing:** Mergers, Acquisitions, Takeovers and Buyouts, Financial Distress and Restricting, Hedging Decision.

**RECOMMENDED BOOKS**

1. *Principles of Managerial Finance, Lawrence J. Gitman, Pearson Education Asia*


4. *Advanced Corporate Finance (Policies and Strategies), Joseph P. Ogden Frank C. Jen Philip F. O’Connor, Farhan Raza Printers, Islamabad*
SYLLABUS FOR THE SUBJECT OF CHEMISTRY
PAPER-I

Total Marks: 100

(A). Physical Chemistry.

1. **Quantum Theory & Atomic Structure**

2. **Chemical Thermodynamics**

3. **Electrochemistry**

4. **Nuclear Chemistry**
   Radioactivity, detection and its measurement, Kinetics of Radioactive decay, Nuclear Fission, Nuclear Fusion, Artificial Radioactivity, uses of Radioactive isotopes and Nuclear Reactors.

(B). Inorganic Chemistry

1. **Modern Theory of Chemical Bonding**
   Modern Theories of Chemical bonding. Valance Bond theory, hybridization of orbital, molecular Orbital theory, comparison of valence Bond and Molecular orbital theories, shapes of inorganic molecules, application of VSEPR concept.

2. **Chemistry d-Block Elements**
   General Characteristics of d-Block elements, Chemistry of First Transition Series, Transition metal complexes, structure of coordinate complex compounds, Postulates and applications of Werner’s Chelates, Nomenclature and Isomerism in coordinate compounds.

3. **Inorganic Chemical Industries**
   Sulphuric acid, Chemical Fertilizers, cements, Ceramics, Soda Ash and Caustic Soda.
4. **Environmental Chemistry**

   Concept of Environmental chemistry, Environmental Pollution, green House Effect, Air Pollution, Water Pollution and Chemical Toxicology.
PAPER-II

(A) Organic Chemistry

1. Structure and Reactivity
   Inductive effect, delocalized chemical bond, resonance effect, 
tautomerism, hyper-conjugation, steric effect and hydrogen bonding.

2. UV and IR Spectroscopy
   Principle of UV-Visible and IR-Spectroscopy, terms involved in 
spectroscopy, -max, bathochromic shift, hypsochromic shift, finger print 
region, overtones and applications in functional group identification of 
organic compounds.

3. Chemistry of Carbonyl Group
   Preparation and properties of Aldehydes and ketones. Acid and base 
catalyzed Aldol condensation reactions and nucleophilic additions to 
carbonyl group.

4. Chemistry of Armatic Compounds
   Mechanism and applications of Electrophilic aromatic substitution 
reactions, Arenium ion mechanism, orientation and reactivity. Aromaticity 
and condensed simple aromatics systems.

5. Stereochemistry
   Steroisomerism, conformational analysis of cycloalkanes, chirality and 
optical activity, recemization, epimerization and geometrical isomerism.

(B) Selected Topics in Applied Chemistry

1. Bio-molecules
   Introduction, classification, structure and metabolism of carbohydrates. 
Primary, Secondary & Tertiary structure of Proteins. Lipids and their 
classification.

2. Chromatography
   Principle and types of chromatography. Thin layer and column 
Chromatography with their applications.

3. Material Chemistry
   Introduction and applications of Polymers, Semi-conductors, composites 
and liquid crystals.
4. **Chemicals in Service of Mankind**  
Detergents, Pesticides, Dyes, Cosmetics and Pigments.

**RECOMMENDED BOOKS**

1. Physical Chemistry by Ira N. Levane, 5\(^{th}\) Edition  
7. Chemistry (Organic & Inorganic) by A.M.H. Shaikh  
8. Advanced Chemistry by Philip Matthews.  
10. Text Book of Inorganic Chemistry for B.Sc. by M. Zafar Iqbal (Revised & Enlarged Edition)  
SYLLABUS FOR THE SUBJECT OF COMPUTER SCIENCE
PAPER- I

Total Marks: 100

SECTION-A

1. **Introduction to Computing**

Number Systems, Binary numbers, Boolean logic, History Computer system, basic machine organization, Von Neumann Architecture, Algorithm definition, design, and implementation, Programming paradigms and Languages, Graphical programming, Overview of Software Engineering and Information Technology, Operating system, Compiler, Computer networks and Internet, Computer graphics, AI, Social and legal issues.

2. **Programming Solving Techniques**

Algorithms and problem solving, development of basic Algorithms, analyzing problem, designing solution, testing designed solution, fundamental programming constructs, translation of algorithms to programmes, data types, control structures, functions, arrays, records, files, testing programmes.

**REFERENCE MATERIAL:**

3. *Computer Science: An overview of Computer Science*, Sherer

SECTION-B

1. **Computer Communications & Networks**

Analogue and digital Transmission, Noise, Media, Encoding, Asynchronous and Synchronous transmission, Protocol design issues, Network System architecture (OSI, TCP/IP), Error control, Flow Control, Data Link Protocols (HDLC,PPP). Local Area Networks and MAC Layer protocols (Ethernet, Token ring), Multiplexing, Switching and IP Networks, Internetworking, Routing, Bridging, Transport layer protocols TCP/IP, UDP. Network security issues, Programming exercises or projects involving implementation of protocols at different layers.
2. **Digital Logic & Computer Architecture**

Logic design of Digital Systems, Fundamental and advanced concepts of Logic Designs, Boolean Algebra & functions, Designing and implementation of combinational and Sequential logic, minimization techniques, number representation and basic binary arithmetic Logic families and digital integrated circuits, use of CAD tools for logic designs. Topics of Computer Architecture.

**REFERENCE MATERIAL:**

1. *Introduction to Computer Networks, Tanenbaum*

**SECTION-C**

1. **Data Structures & Algorithms**

Basic database concepts; Entity Relationship modeling, Relational data model and algebra, Structured Query Language, RDBMS, Database design, functional dependencies and normal forms, Transaction processing and optimization concepts, concurrency control and recovery techniques, Database recovery techniques, Database security and authorization, Small Group Project implementing a database, Physical database design. Storage and file structure, indexed files, hashed files, signature files, b-trees, files with dense index, file with variable length records, database efficiency and tuning.

2. **Operating Systems**

REFERENCE MATERIAL:

PAPER II
SECTION- A

Total Marks:100


Finite State Models: Language definitions preliminaries, Regular expressions/Regular languages, Finite automatas (FAs), Transition graphs (TGs),NF As, kleene’s theorem, Transducers (automata with output), Pumping lemma and non regular language Grammars and PDA: Context free grammars, Derivations, derivation trees and ambiguity, Simplifying CFLs, Normal form grammars and parsing, Push-down Automata, Pumping lemma and non-context free languages, Decidability, Chomsky’s hierarchy of grammars, Turing Machines Theory: Turing machines, Post machine, Variations on 1M, 1M encoding, Universal Turing Machine, Context sensitive Grammars, Defining Computers by TMs.

REFERENCE MATERIAL:

1. Introduction to Computer Theory, Denial Cohen, John Wiley & Sons, Inc.
2. Introduction to Automata Theory, Languages and Computation, J Hopcraft, D. Ullman.

2 Compiler Theory & Design

REFERENCE MATERIAL:


3. Numerical Methods
REFERENCE MATERIAL:

1. *Elements of Numerical Analysis, Dr. Faiz, M. Afzal*

SECTION -B

I. **Data Base Systems**

Basic database concepts, Entity Relationship modelling, Relational data model and algebra, Structured Query language, RDBMS; Database design, functional dependencies and normal forms, Transaction processing and optimization concepts, concurrency control and recovery techniques, Database recovery techniques, Database security and authorization. Small Group Project implementing a database. Physical database design: Storage and file structure, indexed files, hashed files, signature files, b-trees, files with dense index, files with variable length records, database efficiency and tuning Data Warehousing and Data Mining, Emerging Database Technologies and Applications.

REFERENCE MATERIAL:


2. **Software Engineering**

Software Engineering, Process Models, Software verification and validation. Techniques are introduced to evaluate software correctness, efficiency, performance and reliability, integration of these techniques into a verification and validation plan. Technical reviews, software testing, programme verification, prototyping, and requirement tracing. Attitude of industry toward reliability and performance.

REFERENCE MATERIAL:

1. **Artificial Intelligence**


**REFERENCE MATERIAL:**


2. **Computer Graphics**

Graphics hardware, Fundamental algorithms, Applications of graphics. Interactive graphics programming - graph plotting, windows and clipping, and segmentation. Programming raster display systems, panning and zooming. Raster algorithms and software Scan-Converting lines, characters and circles. Region filling and clipping. Two and three dimensional imaging geometry and transformations. Curve and surface design, rendering, shading, colour and animation.

**REFERENCE MATERIAL:**


**FURTHER SUGGESTED READINGS**

6. Tocci & Widmer, Digital Systems, Principles and Applications, 8th Ed.. Published by Pearson Education.


5. **Market structures and behaviour of firms**.

Perfectly competitive markets. Assumptions of the model. The supply curve of a firm and an industry in the short run. Short run and the long run equilibrium of the firm and industry. The shape of the long run industry supply curve and the effects of changing technology. The allocative efficiency of perfect competition.

Imperfectly competitive market structures: Monopolistic competition. The concept of industry and group. Short run and long run equilibrium of a firm. Excess capacity. Comparison with perfect competition and monopoly.

Oligopoly and its basic dilemma. Duopoly. Models of Non-collusive oligopoly: Cournot’s duopoly model, Chamberlain’s oligopoly model, Sweezy’s kinked demand model.


**RECOMMENDED BOOKS:**

PART II
MATHEMATICAL ECONOMICS.


RECOMMENDED BOOKS


PART I

1. **What is Macroeconomics?**: Major macroeconomic issues. Economic models. Stocks and flows, National income accounting, circular flow of income, real versus nominal GDP, the GDP deflator, the consumer price index, economic growth, actual versus potential output, business cycles and their phases, definition of full employment, unemployment, GDP gap, Inflation.


4. **Investment and its determinants**: Marginal efficiency of capital and optimal capital stock, the marginal efficiency of investment. The stock market and Tobin’s q-theory. Inventory investment and the accelerator model. The interaction of multiplier and accelerator. The derivation of IS- curve and its slope. Factors that shift the IS- curve.


8. **Consumption theories and their implications**: Keynesian absolute income hypothesis, Simon Kuznets findings, Duesenbury’s hypothesis, Permanent income hypothesis, life cycle hypothesis, Robert Hall and the Random-walk hypothesis.

**RECOMMENDED BOOKS**


**PART II**

**ECONOMICS OF PAKISTAN**

1. Economic Development

2. Strategic Sectors.
   Importance and problems of the agricultural, industrial and foreign trade sectors of the economy. WTO and its implications. Foreign direct investment, foreign debt burden and debt servicing problems of Pakistan.

3. Monetary and Fiscal policies.
   The role of monetary and fiscal policies in promoting economic growth and tackling the problems of inflation and unemployment in Pakistan. Deficit financing and the annual budget.

**RECOMMENDED BOOKS**

3. *Pakistan Economic Survey, Published by the Government of Pakistan*.
SYLLABUS FOR THE SUBJECT OF EDUCATION
PAPER - I

Total Marks: 100

1. Education in Pakistan

1.1 History of Education in Pakistan
1.2 Aims of Education
1.3 System of Education in Pakistan
1.4 Educational Policies and Development Plans
   1.4.1 All Pakistan Education Conference 1947
   1.4.2 National Commission on Education 1959
   1.4.3 The Education Policy 1972-1980
   1.4.5 Various development plans
1.5 Roles and Responsibilities in Education
   1.5.1 Role of Public Sector in Education
   1.5.2 Role of Private Sector in Education
   1.5.3 Role of NGOs and philanthropists in Education
   1.5.4 Role of foreign donor agencies in Education
   1.5.5 Role of various stakeholders in Education
   1.5.6 Role of Globalization in Education

2. Foundation of Education

2.1 Educational Process
2.2 Role of education in
   2.2.1 Nation Building
   2.2.2 National cohesion and integration
   2.2.3 Character building
   2.2.4 Human resource development
   2.2.5 World peace and prosperity
2.3 Philosophical Foundations of Education
2.4 Psychological Foundations of Education
2.5 Sociological Foundations of Education
2.6 Islamic Concept of Education

3. Curriculum Development and Implementation

3.1 Elements of Curriculum.
3.3 Relationship of Education and Curriculum
3.4 Curriculum Development Process
   3.4.1 Need Assessment
   3.4.2 Formulation of Aims and Objectives
   3.4.3 Selection of Content
   3.4.4 Development of Curricular Materials
   3.4.5 Selection of Teaching-Learning Strategies
   3.4.6 Implementation of the Curriculum
   3.4.7 Evaluation of Curriculum

3.5 Process of Curriculum Development in Pakistan

3.6 Process of Development of Test books and National Textbook Policy

4. Learning and the Process of Learning
   4.1 Principles of Growth and Development
   4.2 Types of Development: Cognitive; Moral; Emotional; Social
   4.3 The process of Learning
   4.4 Theories of Learning
      4.4.1 Behaviouristic theories: Classical Conditioning; Operant Conditioning
      4.4.2 Cognitive Theories: Jean Piaget’s Theory; David Ausubel’s Theory; Robert Gagne’s Theory
   4.5 Factors affecting Learning

5. Process of Teaching and Teaching Strategies
   5.1 Process of Classroom Communication
   5.2 Factors affecting Classroom Communication
   5.3 Barriers to Classroom Communications
   5.4 Use of Instructional Materials and Media
      5.4.1 Role of Instructional Material and Media
      5.4.2 Audio-Materials: Radio and Tape-Recorder
      5.4.3 Visual Materials: Various Boards, Charts, Models, Posters
      5.4.4 Projected Materials: Opaque, Overhead, Slide, Filmstrip, Multimedia
      5.4.5 Non-Projected Materials
      5.4.6 Motion Pictures, T.V., Computer
   5.5 Information and Communication Technologies (ICTs)
PAPER- II
Total Marks: 100

1. Philosophy of Education

1.1 Scope of Philosophy
1.2 Western Schools of General Philosophy
   1.2.1 Idealism
   1.2.2 Realism
   1.2.3 Naturalism
   1.2.4 Pragmatism
   1.2.5 Existentialism
1.3 Schools of Educational Philosophy
   1.3.1 Perennialism
   1.3.2 Essentialism
   1.3.3 Progressivism
   1.3.4 Reconstructionism
1.4 Thoughts of Muslim Philosophers: Imam Ghazali; Ibne-Khaldun; Shah Waliullah; Sir Syed Ahmad Khan; Allama Iqbal

2. Educational Assessment and Evaluation

2.1 Concept of Classroom Assessment and Evaluation
2.2 Distinction between Assessment, Evaluation and Measurement
2.3 Approaches to Evaluation: Formative Evaluation; Summative Evaluation
2.4 Types of Tests: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Tests
2.5 Achievement Tests
2.6 Standardized Tests
2.7 Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

3. Comparative Education

3.1 History of Comparative Education
3.2 Development of Comparative Education
3.3 Purposes of Comparative Education: Intellectual; Planning; Practicability; Educational Problems in World Perspective; Innovation; International Understanding
3.4 Factors of Comparative Education: Economic Factor; Racial Factor; Linguistic Factor; Philosophical Factor; Moral Factor; Religious Factor
3.5 Methods of Comparative Education: Descriptive; Historical; Sociological; Qualitative; Analytical; Synthesis

3.6 Comparative Systems of Education in Selected Countries USA, UK, Japan, Canada, China, India, Malaysia, Pakistan

3.7 Issues and Problems of Education in Pakistan related to: relevance; Access; Equity; Quality; Human Resources; Financial Resources; Madrassa Education; Medium of Instruction.

4. Research Methods in Education

4.1 Scientific Method and its Application in Education

4.2 Sampling Techniques
  4.2.1 Probability Sampling Techniques: Random Sampling; Stratified Sampling; Cluster Sampling
  4.2.2 Non-Probability Sampling Techniques: Systematic Sampling; Convenience Sampling; Purposive Sampling;

4.3 Research Instruments: Questionnaire; Interview; Tests; Observation; Rating Scale

4.4 Types of Research: Basic/Applied Research; Historical Research; Descriptive Research; Correlation Research; Causal-Comparative Research; Experimental Research; Action Research; Qualitative and Quantitative Research

4.5 Research Proposal and Report
  4.5.1 Preparing a Research Proposal
  4.5.2 Writing a Research Repot
  4.5.3 Distinction between a Research Proposal and a Report.

5. Educational Administration and Supervision

5.1 The Concept of Administration
  5.1.1 Process of Administration
  5.1.2 Relationship between Administration and Supervision

5.2 Educational Planning and Organization in Pakistan
  5.2.1 Organizational Pattern of Education in Pakistan
  5.2.2 Role of Federal Ministry of Education
  5.2.3 Role of Provincial Ministry and its Various Agencies
  5.2.4 Educational Statistics and its Role in Planning
  5.2.5 Financing Education in Pakistan
  5.2.6 Educational Administration Under Devolution Plan

5.3 Approaches to Educational Administration: Democratic; Authoritarian; Laissez-faire

5.4 Function of Administration
  5.4.1 Leadership in Improvement of Educational Institution
  5.4.2 Leadership in Improvement of Staff in Educational Institution
  5.4.3 Leadership in Parents and Community Relations
  5.4.4 Leadership in improving the Educational Programme
5.4.5 Leadership in the Evaluation of Educational Institution

5.5 Educational Supervision
5.5.1 Process of Supervision
5.5.2 Importance of Supervision
5.5.3 Principles of Supervision

5.6 Agencies and Organizations promoting Education in Pakistan
5.6.1 National Commission for human development (NCHD)
5.6.2 National Technical and Vocational Education Authority (NTVEA)
5.6.3 Higher Education Commission (HEC)

RECOMMENDED BOOKS:

DRAMA AND POETRY

Description: The readings in this paper focus on selected creative works (Drama and Poetry) written or translated into English language. These readings are wide in scope, offering debate over the contemporary cross-genre and cross-disciplinary interpretations. In general, the candidates are expected to:

1. Display some background historical knowledge and prove their interest in literary writing.
2. Talk about some basic elements/features of drama and poetry through a comprehensive and understandable expression and relate it to the composition of literary sensibility.
3. Comprehend and comment critically and analytically about the suggested readings.
4. Draw on comparisons and contrasts between the classical and the popular, the real and the fantastic, the different and the common, or even between elusive versus illusive and “good” versus “not good”.
5. Form and express and independent viewpoint about these readings.

SELECTED READINGS (Primary Texts)

Drama

1. Sophocles: Oedipus Rex
2. William Shakespeare: The Tempest and Romeo and Juliet
3. G.B. Shaw: Pygmalion
4. John Osborne: Look Back in Anger
5. Eugene O’Neill: The Hairy Ape
6. Arthur Miller: Death of a Salesman
7. Marsha Norman: O’ Night Mother

Poetry

1. William Shakespeare: Like as the waves make towards the pebble, Sonnet 30
2. John Donne: Death be Not Proud
3. John Keats: Ode to Nightingale
4. William Wordsworth: Ode to Immortality
5. Samuel Coleridge: Kubla Khan
6. Walt Whitman: One’s Self I Sing
7. W.B. Yeats: The Second Coming
8. T.S. Eliot: The Wasteland
9. Maya Angelou: Women Work
10. Robert Frost: Mending Wall, The Road not Taken
11. Sameus Heaney: Digging
12. Sylvia Plath: Morning Song
13. Taufeeq Rafat: The Stone Chat
14. Daud Kamal: The Water Carrier
15. Alamgir Hashmi: Autumnal, Pakistan Movement
Fiction and Non-Fiction

Description: The readings in this paper focus on selected creative works (Fiction [Novel and Short Story] and Non-fiction [Prose (Essays) and Literary Criticism) written or translated into English Language. These readings offer debate over the contemporary cross-genre and cross-disciplinary interpretations. In general, the candidates are expected to:

1. Display some background historical knowledge and prove and interest in wide readings.
2. Talk about some basic elements/features of fictions and non-fictions through comprehensive comments.
3. Express creative and critical ideas about these readings.
4. Draw on comparisons and contrasts between the classical and the popular, the real and the fantastic, and the different and the common.
5. Form an independent viewpoint about these readings.

SELECTED READINGS (Primary Texts)

Fiction: Novel/ Short Story

1. Daniel Defoe: Robinson Crusoe
2. Jonathan Swift: Gulliver’s Travels
3. Jane Austen: Pride and Prejudice
4. Charles Dickens: A Tale of Two Cities
5. Virginia Woolf: To the Lighthouse
6. Rudyard Kipling: Kim
7. Earnest Hemingway: A Farewell to Arms
8. Chinua Ache be: Things Fall Apart
9. Harper Lee: To Kill a Mocking Bird
10. Bapsi Sidhwa: Ice Candy Man
11. Paulo Coelho: The Pilgrimage
12. Oscar Wilde: Rose and the Nightingale (Short Story)
13. Naguib Mahfouz: The Mummy Awakens (Short Story)
14. Guy de Maupassant: The String (Short Story)
15. Kate Chopin: The Story of an Hour (Short Story)

Non-Fiction: Prose (Essays) / Literary Criticism

1. Aristotle: The Poetics
2. Francis Bacon: On Studies
3. Charles Lamb: Chimney Sweeper
4. Ngugi Wa Thiong’ O: On Abolition of English Department
5. Dale Spender: Man Made Language
6. Frantz Fanon: “On National Culture” from The Wretched of the Earth
7. Edward Said; “Introduction” to Culture and Imperialism

SOME SUGGESTED SECONDARY READINGS

5. Bradley, A.C. Shakespearean Tragedy (22nd Ed.) London: 1929
SYLLABUS FOR THE SUBJECT OF MASS COMMUNICATION

Paper - I

Media: Functions, Contents and History

1. News: Definition, Structure, Language, Reporting and Sub-Editing
2. Feature, Column and Editorial: Difference of objectives, structure, style and content.
3. Organizational Structures of national newspapers and news agencies
4. Ethics of Journalism and Freedom of the Press
5. Press Laws in Pakistan and Government Media Relationship
7. Role of Radio, Television, print media and internet in Pakistan
8. Social and Developmental Responsibilities of Pakistani Media
9. Importance of Radio TV Documentary and Live Programmes
10. Difference between the news of print media and electronic media

Total Marks: 100

Paper-II

Communication, Advertising and Public Relations

2. Barriers to Communication
3. Principles of Effective Communication
4. Development Communication and Development Journalism
5. Difference between Mass Communication, Development Communication, Development Journalism and Development Support Communication
6. Two step flow of communication and Opinion Leaders

Total Marks: 100
8. Advertising: Definition-Merits and Demerits- Advertising business in Pakistan-Departments of an Advertising Agency.

9. Importance of research in Advertising and Public Relations

10. Advertising as the lifeblood of media

Recommended Books

1. Hijazi and Naqqash: Mass Communication Theory and Practice, Lahore, 2005
8. Shafiq: Journalism and Communication Lahore. 2006
SYLLABUS FOR THE SUBJECT OF MATHEMATICS

Paper I

Total Marks: 100

Candidates will be asked to attempt three questions from Section A and two questions from section B.

Section A

Limits, Continuity, Differentiability and its Applications, General theorems (Rolle's Theorem, Mean value theorem), Asymptotes, Applications of Maxima and Minima. Definite and Indefinite integrals and their Application, Quadrature, Rectification, Numerical methods of Integration (Trapezoidal and Simpson rule), Multiple integrals and their Applications. Areas and Volumes, Centre of Mass, Reimann-Stijles Integral, Ordinary Differential Equations (O.D.Eqs) and their Applications in Rectilinear motion and Growth/Decay problems. 2nd Order Differential Equations with Applications (Spring Mass and Simple Harmonic Oscillator Problems).

Section B


Conic Sections in Cartesian coordinates, Plane Polar Coordinates and their use to represent the straight line and Conic section. Vector equation for plane and space curves. Tangents and Normals and Binormals, Curvature and torsion, Serre Frenet's Formula.
Recommended Books:


Section A

Groups: Definition and examples of Groups, Order of a Group, Order of an element of a Group, Abelian and non-Abelian Groups and Cyclic groups. Lagrange theorem and applications, Normal subgroups, Characteristic Subgroups of a group, Normalizer in a group, Centralizer in a group. Fundamental Theorem of Homomorphism, Isomorphism theorems of groups, Automorphisms


Section B


Recommended Books:

SYLLABUS FOR THE SUBJECT OF PERSIAN
PERSIAN PAPER – I

HISTORY OF PERSIAN LANGUAGE & LITERATURE

Total Marks: 100

A. History of Persian Language 10 Marks
   a. Avesta
   b. Old Persian
   c. Pahlavi
   d. Dari
   e. Modern Persian

B. Persian and Pakistan 10 Marks
   a. Persian’s Influence on Urdu
   b. Persian’s Importance for Pakistan
   c. Persian’s Impact on Culture and Civilization of the sub-continent

C. History of Persian Literature in Iran 20 Marks
   a. Samanids
   b. Ghaznavids
   c. Saljuques
   d. Mangols
   e. Taimurids
   f. Qajars
   g. Safvids
D. History of Persian Literature in the Sub-continent 10 Marks
   a. Ghaznvids
   b. Sultanates
   c. Mughuls

E. Special Study of Iranian Poets and Prose Writers 15 Marks
   a. Poets:
      i. Firdousi
      ii. Jalal-ud-Din Rumi
      iii. Saadi Shirazi
      iv. Hafiz Shirazi
      v. Parveen Ietesami
   
   b. Prose Writers:
      i. Attar Nishaburi (Tazkart-ul-Aoulia)
      ii. Saadi Shirazi (Gulistan)
      iii. Sadiq Hidayat (As a modern short story writer)

F. Special Study of the sub-continent’s Persian poets and Prose writers 15 Marks
   a. Poets:
      i. Masood Saad Salman
      ii. Amir Khursrou
      iii. Asad Ullah Khan Ghalib
      iv. Allama Iqbal
   
   b. Prose Writers:
      i. Muhammad Aoufi (Jawam-e-ul-Hikayat)
      ii. Hassan Sajzi (Faiwaid-ul-Fawad)

G. Short question and answers from all the course of the “A” paper 20 Marks
Recommended Books:

- Grammar of the Persian Language, Part-I, by John T. Plaats & Par-II
- Literary History of Persia by E.G. Brown.
- Persian Grammar, by Miss Lanpton.
PERSIAN PAPER - II

Language and texts

A. Iranian Prose 10 Marks
   a. Tazakrat-ul-Aoulia by Attar Nishaburi (Selection)
   b. Gulistan-e-Saadi (Chapter 1 & 8 only prose)
   c. She Tar (شاتر) (Short story by Jalal Aal-e-Ahmad)

B. Sub-continent's prose 10 Marks
   a. Kashf-ul-Mahjub by Ali Hujveri (Bab-ul-Ilm/باب الالم)
   b. Jawamey-ul-Hikayat by Aoufi (selection)

C. Iranian Poetry 10 Marks
   a. Shahnamah of Firdousi (Selection of 1st - 122 Verses)
   b. Poetry of Rumi
      i. Masnavi (مناسِب)
      ii. Ghazliyat
### Ghazliat-e-Hafiz

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### Rubaiyat-e-Khayyam

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### Neema Yushij (poem, Aie Aadamhata)

### Sub-Continent's Poets

#### Ghazals of Amir Khusrou

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b. Ghazals of Ghalib

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E. Iqbal Studies 30 Marks

a. Masnavi-e-Asrar-e-Khudi (شمارہ عارضیات)

b. 

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6.  
7.  
8.  

C. Poems

1.  
2.  
3.  

D. Quatrains

1.  
2.  
3.
F. Translation of simple one passage from Urdu or English in to Persian

10 Marks

G. Short questions and answers from all the course of "B" paper

20 Marks

Recommended Books:
SYLLABUS FOR THE SUBJECT OF PHILOSOPHY

Paper – I

Total Marks: 100

Western Philosophy

1. **Introduction**: Nature and Value of Philosophy

2. **Greek Philosophers**:
   a) Plato: Metaphysics, Theory of Knowledge, Theory of State
   b) Aristotle: Metaphysics, Theory of Knowledge and Logic

3. **Modern Philosophers**:
   a) Descartes: Doubt as a key to certainty, Dualism
   b) Spinoza: Doctorine of substance, Ethics
   c) Locke: Representative Realism
   d) Berkeley: Subjective Idealism
   e) Hume: Skepticism
   f) Kant: Transcendental Idealism
   g) Hegel: Dialectical Method, Absolute Idealism
   h) Nietzsche: Superman, Will to Power

4. **Contemporary Philosophical Movements**:
   a) Existentialism: Jean Paul Sartre
   b) Logical Positivism: Criterion of Verifiability, Refutation of Metaphysics
   c) Neo-Pragmatism:
      Richard Rorty: Objectivity, Relativism and Truth

RECOMMENDED BOOKS:


Paper – II
Muslim Philosophy

1. **Genesis and Development of Theological and Philosophical Thought in Islam**

2. **Muslim Theology:**
   a) Mutazilites: Five Principles, Naturalistic Ethics
   b) Asharites: Divine Attributes, Createdness / Uncreatedness of the Quran, Human Freedom

3. **Sufism:**
   a) Origin of Sufism and its Characteristics
   b) Metaphysics: Wahdat al Wajud and Wahdat al Shuhud

4. **Muslim Philosophers:**
   a) Ibn Sina: Concept of Being, Doctrine of Emanation, Psychology
   b) Al Ghazali: Method, Refutation of Philosophers
   c) Ibn Rushd: Reconciliation between Philosophy and Religion, Theory of Knowledge
   d) Ibn Khaldun: Concept of History, Refutation of Metaphysics

5. **Modern Reconstructionists of Islamic Thought:**
   a) Shah Waliullah: Metaphysics, Social Philosophy
   b) Sir Syed Ahmed Khan: God, Man and Universe, Concept of Religion and Ethics
   c) Allama Muhammad Iqbal: Epistemology, Doctrine of Ego, Concept of Ijtehad

6. **Contemporary Debates:**
   a) Religious Modernism
   b) Religious Fundamentalism
   c) Islamization of Knowledge

**RECOMMENDED BOOKS:**


Course Outline:

1. **The Universe**:

   The solar system and the Earth. Earth’s Origin, shape and size, rotation and revolution, distribution of land and water. Geological time scale.

2. **Lithosphere**:

   Composition and internal structure of the Earth, Rocks-origin, formation and types (igneous, sedimentary and metamorphic), plate tectonics, mountain building geomorphic processes internal and external, earthquakes, volcanic activity, weathering, mass wasting, erosion and deposition, cycle of erosion; landforms produced by surface water, ground water, wind and glaciers.

3. **Elements of weather and climate**:


4. **Hydrosphere**:

   Configuration of ocean floor, ocean deposits. Composition, temperature and salinity of ocean water, movements of the ocean water, waves, currents and tides.

5. **Biosphere**:


6. **Study of Maps**

Map projection general principles, classification of network by simple graphic methods of the following projections. Cylindrical, Simple, Equal Area and MerCator’s (with table) Conical with one and two standard parallel’s and Bonne’s projections. Zenithal, Gnomonic Stereographic and orthographic (Polar Cases).

7. **Scales: types and their use:**

8. **Methods of representation of relief:**

Drawing of composite contour maps with the help of given data and information preparation of distribution maps with the help of symbols line-bar-shade dot and circle. Simple quantitative techniques and their use in geography. Study of frequency distribution average’s (mean median and mode), Mean deviation, standard deviation and correlation. Index numbers and time series.

**RECOMMENDED BOOKS:**

Course Outline:-

Man and his habitat: Concepts of Environmentalism and Possibilism, population growth, dynamics, (fertility, mortality, & migration), world society and culture, races, languages and religions, natural resources. World population, distribution, density and growth. Population structure, population change (Natural increase & migration) Migration factors (pull and push) types of migration Settlements: types of settlement, urbanization, rural urban characteristics urban hierarchy, Urban function and problems of urban places the Central Place theory.

BOOKS:


ECONOMIC GEOGRAPHY

Course Outline:-

Introduction: Definition, scope, approaches to study and relationship with other disciplines.

Economic activities: Classification and general distribution.

Production and consumption: producer and consumer, decision making, primary, secondary, tertiary, quaternary, quinary.

Historical Evolution of World Economics Systems: Medieval feudal economics, industrial revolution, economic benefits from colonialism. Modern world system.
Various types of agriculture and their distribution, subsistence, primitive, gathering, hunting, herding, cultivation, intensive farming, gathering commercial grain farming, fishing, dairying, mixed farming and plantation farming.

Agriculture conditions of agriculture, the physical constraints on agriculture.

Land factor in agriculture, world agricultural system, problems and policies in agriculture.

The role of selected commodities e.g., wheat, rice, sugarcane, cotton, etc.

Forest resources: world distribution, environmental and economic.

Mineral resources, distribution of important minerals, metalliferous minerals, the non-metalliferous minerals, economic factors in mining.

Power resources, form of power, solid fuels, oil & natural gas, non-exhaustible sources of energy.

Manufacturing: light and heavy industries, locational factors and locational theories, locational analysis of selected industries, iron and steel, textile (cotton, jute, woolen, synthetic) petro-chemical, world industrial regions.

Trade and service function, tertiary activities, distribution of services service industries.

Transport and trade: significance and characteristics of transport system, network, modes of transport, specialization and international trade.

Multilateral and bilateral trade, free trade areas and common markets, balance of trade, factors of trade, world pattern of trade.

BOOKS: -


REGIONAL GEOGRAPHY

Course Outline:

Scope, Status and the significance of the regional approach and concept in Geography SAARC Countries with special reference to Pakistan, Environmental setting: physical and climatic. Natural and cultural resources: Vegetation and agriculture, population, hydrology and irrigation, mineral and power resumes, industries (major industries e.g. Iron & Steel textile, cement, chemical, sugar) trade and communication.

BOOKS:-

5. James and Jones, 1965 “American Geography” Inventory and Prospects Association of American Geographers USA.
7. Abdul Hameed (1972) “Historical and Descriptive geography of Water development in West Pakistan: A case study of the Middle Indus Basin” San Francisco State College.
SYLLABUS FOR THE SUBJECT OF PHYSICS
Paper -1
Total Marks: 100

Mechanics

Vectors - Dots, Cross and triple products, Gradient, divergence and applications. Curl of a vector field; Gauss's Theorem; Stokes theorem

Newtonian laws of motion; motion of charged particles in electric and magnetic fields; Motion in a circle, Law of conservation of energy; Conservation of linear and angular momentum; Dynamics of rigid body; spin and precession; gyroscope; Gravitation; planetary motion including satellite work energy theorem.

Special theory of relativity. Mischelson - Morley experiment, Einstein's postulates; Lorentz transformation; time dilation, length contraction; equivalence of mass and energy.

Fluid Mechanics

Surface tension; Viscosity; elasticity; fluid motion and Bernoulli's theorem.

Waves and Oscillation

Free oscillation with one and two degrees of freedom; free and forced oscillations, Lissagous figure, Coupled oscillations, Travelling waves and transmission of energy; Phase and Group velocity; Standing waves Longitudinal waves.

Reflection, Refraction, Interference, Diffraction and Polarization of waves; interferometer and Newton's rings; Diffraction Gratings and their resolving power; Spectrometers. Electromagnetic wave equation; Normal and anomalous dispersion; Coherence, lasers and its application.

Heat and Thermodynamics

Perfect gas and Vander Waals equation; Three Laws of Thermodynamics; Entropy, entropy of an ideal gas; Helmbroltz function, Gibbs function; Maxwell's equations; Enthalpy, Thermal properties of Simple system; Production and measurement of low temperatures; Kinetic theory of gases; Maxwellian distribution of molecular velocities; Brownian motion; Transport phenomena. Classical Maxwell-Boltzmann Statistics and its applications, Quantum Bose-Einstein and Fermi-Dirac Statistics.
Electricity and Magnetism

Electric field due to point charges; Gauss' law; Electric potential and Poisson and Laplace's equation; Dielectric medium and Polarization; Capacitance; Moving charges and magnetic field; Ampere's law; Vector potential; Magnetic properties of matter; Transient current; Faraday's law of electromagnetic induction; Alternating current and LRO circuit. Maxwell's equations; poynnting theorem and poynnting Vector.

Electronics

Thermionic emission; Space charge; Diode; Triode Tetrode; Pentode and their static and dynamic characteristics; Amplitude modulation and demodulation or detection; Various basic circuits for rectification, amplification modulation and detection connected with radio receivers and transmission; n and p type semiconductors; Biased function; Transistors; Common base, common emitter and common collector configurations; OP Amplifier; characteristics, modes of operation, applications number systems: decimal, octal and Hexadecimal; Binary code, Binary arithmetic, BCD code, and parity logic gates; Boolean identities; De Morgan's theorems; logic simplification; Combinational logic circuits: decoders, parity generator and checker circuits, flip flops: RS, JK and D-type.

Atomic Physics

Bohr theory and quantum numbers including electron spin; Pauli's exclusion principle; Spectra of simple systems with one or two valence electrons. Photo electric effect; Compton scattering; pair production; Lande's g factor and Zeeman effect; Waves and particles and De Broglie's Hypothesis; Schrodinger wave equation and its application to one dimensional harmonic oscillator. Heisenberg's uncertainly principle.

Nuclear Physics

Structure of Nuclei; Radioactivity α, β, and decay. Methods of detection, Mass Spectrometer. Accelerators. Phenomenon of fission; reactor and nuclear power, nuclear fusion and its application; Nuclear models; Elementary particles and their properties.
SUGGESTED READINGS

1. *Perspectives of Modern Physics, A. Beiser.*
8. *Nuclear Physics, W.E. Burcham.*
9. *Nuclear Physcis, Kaplan*
10. *Fundamentals of digital electronics, Floyd*
11. *Waves & Vibrations, Pain*
SYLLABUS FOR THE SUBJECT OF PHYSICS

Paper -1

Total Marks: 100

Mechanics

Vectors - Dots, Cross and triple products, Gradient, divergence and applications. Curl of a vector field; Gauss's Theorem; Stokes theorem

Newtonian laws of motion; motion of charged particles in electric and magnetic fields; Motion in a circle, Law of conservation of energy; Conservation of linear and angular momentum; Dynamics of rigid body; spin and precession; gyroscope; Gravitation; planetary motion including satellite work energy theorem.

Special theory of relativity. Mischelson - Morley experiment, Einstein's postulates; Lorentz transformation; time dilation, length contraction; equivalence of mass and energy.

Fluid Mechanics

Surface tension; Viscosity; elasticity; fluid motion and Bernoulli's theorem.

Waves and Oscillation

Free oscillation with one and two degrees of freedom; free and forced oscillations, Lissagous figure, Coupled oscillations, Travelling waves and transmission of energy; Phase and Group velocity; Standing waves Longitudinal waves.

Reflection, Refraction, Interference, Diffraction and Polarization of waves; interferometer and Newton's rings; Diffraction Gratings and their resolving power; Spectrometers. Electromagnetic wave equation; Normal and anamolous dispersion; Coherence, lasers and its application.

Heat and Thermodynamics

Perfect gas and Vander Waals equation; Three Laws of Thermodynamics; Entropy, entropy of an ideal gas; Helmboltz function, Gibbs function; Maxwell's equations; Enthalpy, Thermal properties of Simple system; Production and measurement of low temperatures; Kinetic theory of gases; Maxwellian distribution of molecular velocities; Brownian motion; Transport phenomena. Classical Maxwell-Boltzmann Statistics and its applications, Quantum Bose-Einstein and Fermi-Dirac Statistics.
Electricity and Magnetism

Electric field due to point charges, Gauss' law Electric potential and Poisson and Laplace's equation Dielectric medium and Polarization; Capacitance; Moving charges and magnetic field Ampere's law; Vector potential; Magnetic properties of matter; Transient current; Faraday's law of electromagnetic induction; Alternating current and LRO circuit. Maxwell's equations; poynting theorem and poynting Vector.

Electronics

Thermionic emission; Space charge; Diode. Triode Tetrode; Pentode and their static and dynamic characteristics; Amplitude modulation and demodulation or detection; Various basic circuits for rectification, amplification modulation and detection connected with radio receivers and transmission; n and p type semiconductors; Biased function; Transistors; Common base, common emitter and common collector configurations OP Amplifier; characteristics, modes of operation, applications number systems: decimal, octal and Hexadecimal; Binary code, Binary arithmetic, BCD code, and parity logic gates Boolean identities; De Morgan's theorems: logic simplification; Combinational logic circuits: decoders, parity generator and checker circuits, flip flops:RS, JK and D-type.

Atomic Physics

Bohr theory and quantum numbers including electron spin; Pauli's exclusion principle; Spectra of simple systems with one or two valence electrons. Photo electric effect Compton scattering; pair production; Lande's g factor and Zeeman effect; Waves and particles and De Broglie's Hypothesis; Schrodinger wave equation and its application to one dimensional harmonic oscillator. Heisenberg's uncertainly principle.

Nuclear Physics

Structure of Nuclei; Radioactivity , , and decay. Methods of detection, Mass Spectrometer. Accelerators. Phenomenon of fission; reactor and nuclear power, nuclear fusion and its application; Nuclear models; Elementary particles and their properties.
SUGGESTED READINGS

9. *Nuclear Physics*, Kaplan
10. *Fundamentals of digital electronics*, Floyd
SYLLABUS FOR THE SUBJECT OF POLITICAL SCIENCE

PAPER: I POLITICAL SCIENCE: BASIC PRINCIPLES (Marks: 100)

PART: A Political Theory

This part of the course relates to the traits of political thought as presented historically by the Western and Muslim philosophers.

1. Western Political Thought: Plato; Aristotle; Machiavelli; Hobbes; Locke; Rousseau; Marxism; Leninism; Maoism

2. Muslim Political Thought: Al-Farabi; Al-Mawardi; Al-Ghazali; Tusi; Ibn-e-Khaldoon; Allama Iqbal

PART: B State and Individual

The Institution of State and its attributes for human welfare have been highlighted here.

3. Welfare State Perceptions: Western and Islamic

4. Basic Concepts: Sovereignty; Constitutionalism; Power Distribution; Law; Liberty; Equality; Rights and Duties

5. Modes of Participation:
   Demands; Decisions; Public Opinion;
   Political Parties; Pressure Groups; Representation

6. Institutions and Leadership:
   i) Legislature; Executive; Judiciary
   ii) Competing Elites: Political; Military; Bureaucratic

7. Forms of Government:
   Monarchy; Democracy; Dictatorship; Unitary; Federation;
   Confederation; Parliamentary; Presidential; Authoritarian
Taking contemporary state as a dynamic phenomenon, having its own system structures and assigned functions, a comparative analysis of some outstanding developed and developing state systems is made here. The emphasis is equally on Pakistan as an emerging political system of the world.

**PART: A  Political Systems**

8. Concept of Political System:  
   i) Easton on Behaviorism  
   ii) Almond on Functionalism  

9. Developed Political Systems:  
   Main constitutional features  
   of USA, UK, France and former USSR  

10. Developing Political Systems:  
    Main constitutional features  
    of Turkey, India and China.

**PART: B  Pakistan**

11. Pakistan as a Nation-State:  
    Rise of Muslim Nationalism in South Asia under the dynamic leaderships of  
    Sir Syed Ahmad Khan, Allama Iqbal and  
    Quaid-e-Azam Mohammad Ali Jinnah

12. Political System of Pakistan:  
    Comparative and critical analysis of the Constitutions of 1956, 1962 and 1973  
    (with amendments)

**RECOMMENDED BOOKS**

Paper: I  POLITICAL SCIENCE: BASIC PRINCIPLES  
Part: A Political Theory

1. M.M. Sharif, History of Muslim Philosophy  
2. Rosenthal, Political Thought in Medieval Islam  
3. Haroon Khan Sherwani, Muslim Political Thought and Administration  
4. George H. Sabine, History of Political Thought  
5. Judd Harmon, Political Thought: From Plato to Present

Part: B Individual and State
6. Rodee and Anderson, Introduction to Political Science
7. Mazharul Haq, Theory and Practice in Political Science
8. Rosenthal, Modern Islamic State
9. Samuel Beer and Adam Ullam, Patterns of Government
10. V.O. Key, Politics, Parties and Pressure Groups
11. Earnest Barker, Reflections on Government

Paper: II  COMP ARATIVE POLITICS
Part: A Political Systems: Developed and Developing
12. Almond and Powell, Comparative Politics
13. Almond and Coleman, Politics of Developing Areas
14. Roy C. Macridis, Comparative Politics
15. Macridis and Wards, Modern Political Systems (Asia)
16. J. M. Coleman, Political Institutions in Europe
17. P. G. Cocker, Contemporary British Politics and Govt.
18. Thomas Patterson, The American Democracy

Part: B  Pakistan
19. Keith Callard, Pakistan: A Political Study
20. Khalid Bin Sayeed, Pakistan: The Formative Phase
22. Lawrence Ziring, Pakistan in the Twentieth Century
23. G. W. Chaudhry, Constitutional Development in Pakistan
24. Pakistan Historical Society, History of Pakistan
25. Jamil-ud-Din Ahmad, Speeches and Writings of M.A. Jinnah
27. Mushtaq Ahmad, Government and Politics in Pakistan
SYLLABUS FOR THE SUBJECT OF PRINCIPLE OF ENGINEERING
PAPER- I
Fundamentals of Engineering

Total Marks: 100

1. **Applied Physics:**


Quantum mechanics: Matrix Mechanics, Planck’s constant, Quanta, Quantization, Quantum harmonic oscillator, Quantum number, Spin, Wave-function, Wave mechanics, Wave-particle duality, Zero-point energy, Pauli Exclusion Principle, Heisenberg Uncertainty Principle.


Optical Physics: Aberrations, Diffraction, Dispersion, Optical Resolution, Polarization, Ray (optics), Reflection, Refraction, Scattering, Wave, Lenses, Mirrors, Optical instruments, Prisms

Particle Physics: Fundamental force (gravitational, electromagnetic, weak, strong), Elementary particle, Spin, Antimatter, Quantum gravity, Vacuum energy


**RECOMMENDED BOOKS:**

1. *Sears and Zemansky’s University Physics* by Hugh D. Young, Roger A. Freedman, T.R. Sandin and A. Lewis Ford
2. *Basic Physics* by Karl F. Kuhn

2. **Applied Chemistry:**

Electro-Chemistry: Electrolysis, Electrolytic conductance, Migration of ions, Galvanic Cells, reversible and Irreversible cells, Standard electrode potentials, Buffer solutions.

Liquids and their properties: Vapor pressure, vapor pressure and boiling point, surface tension, viscosity, Refractive index and its measurement, Polarimetry, Intermolecular and intermolecular forces amongst liquid molecules.

Solid State: Crystalline structure, different properties of crystals, X-rays and crystal structures, production of X-rays, Heat capacities of solids.


3. **Applied Electricity & Electronics:**

Electricity & Magnetism; Electrical potential, Resistance, Laws of resistance, Conductance, Conductivity, Impedance, Ohm law, Resistance in series and in parallel, practical resistors, work, power, Energy, Joule’s law of electric field intensity, Gauss’s Theorem, Capacitor, Capacitance, Capacitors in parallel and series. Force on a conductor in a magnetic field, electrical and magnetic circuits, leakage flux, Relation between magnetism and electricity, Induced emf, induced current and directions, Faraday’s laws of electromagnetic inductions, Lenz’s law, dynamically induced emf, Self inductance, mutual inductance and inductance in series/parallel, magnetic hysteresis, Energy stored in magnetic field, Generation of alternating currents and voltages.

**Electrical Machines:**

DC Motors: Shunt, Series and Compound Motors, Speed and Torque Relations. Transformers: Principle, Construction, Voltage transformation ratio, Step-up/step-down transformers, Copper & Iron Losses, Transformer connections; delta and star.


Generators: Principle, Construction, Different components of generators. AC Generators, DC Generators.

**Electronics:**

N-type material, P-type material, diodes, junctions, P-N junction, forward bias, reverse bias.

Transistors: types, calculations of voltages and currents in simple transistor circuits.

Integrated circuits: OP Amps, timers, flip flop, converters, filters.

Telecommunications: EM theory, antennas, antenna gain, free space loss, fading. Modulations (AM, FM, PM, PWM, Delta, FSK, ASK, PSK), Error correction, Demodulation, Detectors, Transmitter, Receivers.

DSP and Controls; filters, stability, Z-transform, Nyquist criteria, S domain, transfer functions.

Introduction to Computing; History and evolution of computers, central processing unit, data storage, input/output devices, multimedia, operating systems, programming languages, networking, the internet, system analyses and design, management information system, electronic commerce, security and privacy issues, ethical issues and the computing profession,

**Power Systems:** power network analysis, Polyphase circuits, Transients, Transmission Lines, Losses.

**RECOMMENDED BOOKS:**

1. *Electrical Technology by B.L. Tharaja*
2. *Electronic Devices and Circuits by Bogart.*
3. *DC Machines by P.C. Sen*
4. *Semiconductors by Manzar Saeed*
5. *Modern Digital and Analog Communication by B.P.Lathi*
6. *Introductory Electronic Devices and Circuits by Paynter*

4. **Mechanical Engineering Fundamentals**

Mechanics and Strength of Materials: Concept of Stress and Strain, bending, torsion, geometric properties of areas, principal stresses, Tensile testing, Stress-Strain curve, Difference between Engineering and True stress & Strain, Shear Stress & Strain, Concept of elastic and plastic deformation, Yield & ultimate Tensile strengths, Elongation, Toughness and Resilience, Ductility and Malleability, Hardness Testing, Brinell and Rock well Hardness test, bending moment,

Fluid Mechanics: Properties and basics of fluid mechanics, loss of head, power transformation by fluids, pumps, turbines. Fluid static's, Fluid dynamics, Types of flow: Turbulent and Laminar, Reynold's number.
Thermodynamics and Heat Transfer. (Basics of thermodynamics, properties of fluids and steam, steam turbines, power plants. First and second Laws of Thermodynamics, Enthalpy, Entropy, Heat Capacity, Carnot cycle, Gibbs free energy, Equilibrium, PV – diagrams, Refrigeration and Air conditioning, principle and models of heat transfer, Evaporators, Condensers, Heat engines, Engines (2 and 4 strokes ).

Manufacturing: Different manufacturing processes like Casting, Forging, Machining, Rolling, Extrusion, Wire-drawing, welding, Turning(lathe), Milling, Shaping, Gear cutting, Drilling, Fitting.

RECOMMENDED BOOKS:

2. *Fluid Mechanics* by Lewitt
3. *Fluid Mechanics* by Daugherity
7. *Testing of metals* by Fazal Karim

5. **Materials Engineering:**

   Introduction to Materials; Types of Materials. Structure of an atom, Metallic bonding, Crystal Structures and geometry, Metallic Materials: Mechanical properties of Metals and alloys, Ferrous and non-ferrous metals & alloys, Applications of Different metals and alloys in industry


   Traditional and engineering ceramics, Processing of ceramics, Electrical properties of ceramics, Mechanical properties of ceramics, Thermal properties of ceramics, Glasses.

RECOMMENDED BOOKS:

2. *Introduction to Physical Metallurgy* by Sydney H. Avner
6. **Civil Engineering Fundamentals:**

   Structures; stress, strain, shearing force and bending moment concepts, beams, columns, footing. Simply supported and Cantilever beams, Pulleys and gears.

**Transportation Engineering:** Introduction, highway administration, scheme preparation, traffic appraisal, environmental appraisal, highway geometry, drainage, lighting, signing, communications and safety, roads and traffic in urban areas, highway maintenance, low cost roads in developing countries.

**Environmental Engineering:** Environmental impacts on water resources projects, transportation engineering projects, waste water treatment and management, water supply and distribution.

**Fundamentals of Hydraulic Engineering:** Properties of fluid mechanics, pressure measuring devices, flow measuring devices, losses in pipelines, open channels, barrages and dams.

**RECOMMENDED BOOK:**

1. *Properties of Concrete by A.M. Neville.*
3. *Strength of material by Andrew Pytel and Singer.*
4. *Transportation Engineering, Planning and design by Paul Wright.*
5. *Civil Engineer’s Reference Book by LS Blake 4th Ed.*
7. *Public Health Engineering by STEEL.*
8. *Fluid mechanics with engineering applications, 10th Ed by Finnemore/Franzini.*
SYLLABUS OUTLINES-ENGINEERING MANAGEMENT

PRINCIPLE OF ENGINEERING
PAPER II

Paper II will comprise EIGHT questions including One Compulsory MCQ type question containing 20 parts of one mark each (1/2 marks will be deducted for each wrong answer). Candidates will be required to attempt total FIVE questions including the compulsory question. Each question will carry 20 marks.

1. **Engineering Economics**: cost analysis, purchasing power parity, supply and demand, macro economics, monopoly and oligopoly.

2. **Costing, Accounting and Budgeting**: Net present value, Net future value, cash flows, auditing, income statement, balance sheet, taxation, financial risk management, cost analysis.

3. **Testability and Test Planning**: Black box testing, White box testing, test plans, test executions, regression testing, destructible and non destructible testing, test reports.

4. **Project Management**: time lines, milestones, resources allocation, dependency, Gant Charts,

5. **inventory Management**: FIFO models, LIFI models, Identification Schemes, Inventory management systems.

6. **Quality Management Systems**: QA models. Deming, Juran Crosby, Quality circles, management responsibility, quality planning, purchasing, design process and design validation, quality audit, corrective and preventive measures.

7. **Time analysis and Manufacturing Management**: Managerial issues, manufacturing systems, process optimization, mathematical modeling, time management, resource allocation, raw material, production analysis.

8. **Problem analysis and Decision tree**: decision support system, decision tree, design of experiments.

9. Production and operation management

10. Management tools

**RECOMMENDED BOOKS:**

1. **Handbook of Engineering Management by Dennis Lock.**
2. **Total Quality Management by Dale H. Besterfield, Carol Besterfield-Michna, Glen H. Besterfield, Mary Gesterfield-Sacre**
3. **Manufacturing Processes and systems by Ostwalds**
4. **Handbook of Reliability Engineering and Management by W. Grant Ireson, Clyde F. Coombs, Richard Y. Moss.**
SYLLABUS FOR THE SUBJECT OF PSYCHOLOGY

PAPER- I

Total Marks : 100

I. Introduction to Psychology
   Definition, Evolution and Scope of Psychology
   Schools of Psychology: Behaviorism, Psychoanalysis, Humanistic/ Existential,
   Cognitive and Biological School
   Recent Trends and Specialties in Psychology

II. Sensation and Perception
   Sensory Processes
   Theories of Vision and Hearing
   Theories of Taste Smell and Position
   Senses of Touch Position and Balance

   Nature of Perceptual Organization
   Perception of Distance, Movement, Space, Depth, Color
   Perceptual Constancy
   Perception and Optical Illusions
   Extrasensory Perception
   Perceptual Development

III. Learning, Memory and Intelligence
   Learning
   Different Types of Learning:
   Classical Conditioning
   Operant Conditioning
   Observational Learning

   Memory
   Short Term and Long Term memory
   Information Processing Theory
   Encoding, Storage and Retrieval
   Forgetting

   Intelligence
   Extremes of Intelligence: Mental Retardation and Giftedness
   Theories of Intelligence
   Intelligence and Psychological Testing
IV. Biological Foundations of Behavior
Components of Nervous System
Structure and Functions of the Brain
Brain and Behavior
Endocrine System
Genetic Influences on Behavior
Nature, Nurture and Human Diversity

V. Child Development
Introduction to Child Development
Historical and Modern Views
Domains of Development
Theories of Child Development
Biological Development
Cognitive Development
Psychological Development

VI. Motivation
Nature of Motives
Needs, Drives and Motivations
Concept of Homeostasis
Types of Motivation
Theories of Motivation
Role of Culture in Motives

VII. Emotions
Nature and Types of Emotions
Theories of Emotions
Biological and Psychological Changes in Emotions
Role of Endocrine Glands
Situational Influences and Cultural Practices
Frustration and Conflict

SUGGESTED READINGS
1. Psychology; Themes and Variations 5th Ed., Wayne Weiten
2. Psychology 5th Ed., Benjamin b. Lahey
4. Introduction to Psychology 6th Ed., John W. Santrock
5. Psychology & Life 7th Ed., Floyd I. Ruch
8. Psychology 6th Ed., David G. Myers
10. Social Psychology 7th Ed., David G. Myers
11. Principles of Human Neuropsychology, G. Dennis Rains
12. An introduction to the History of psychology, Hergenhahn
I. Health, Stress and Coping

Health Impairing Behaviors:
Smoking, Alcoholism, Poor Nutritional Habits, Lack of Exercise, Behavioral Aids. Stress and its Impact on Health
Major Types of Stress
Physiological & Psychological Reactions to Stress

II. Personality Theories and Assessment

Definition of Personality
Theories of Personality Development
Psychoanalytical Theory
Social Learning Theory
Humanistic Theory
Traits Theory and Situations
Human Diversity
Personality Assessment

III. Psychological Disorders and their treatment

Abnormal Behavior; Myths, Realities and Controversies
Criteria of Abnormal Behavior
The Classification of Disorders
Diagnostic and Statistical Manual of Mental Disorders (DSM)
Anxiety Disorders, Mood Disorders and Personality Disorders

Treatment and Intervention
Stages of Psychotherapy
Goals of Psychotherapy
Family & Group Therapies

IV. Social Processes, Society and Culture

Social Roles and Rules
Social Norms and Conformity
The Process of Socialization and Attitude Development
Situational Effects on Social Behavior
Social Cognition and Relationships
V. Behavior and Group Dynamics

Leaders, Groups and Decision Making
Aggression, Altruism and Pro-social Behavior
Situational Influences and Cultural Constraints
Prejudice and Stereotypes
The Psychology of Conflict and Peace

VI. Research Methods in Psychology

Scientific Research in Psychology

Types of Research:
Experimental Studies: Placebo Effect and Use of Placebos in Experiments
Correlational Studies
Descriptive Studies
Case Studies
Surveys

VII. Ethical issues in Psychology

Confidentiality
Informed Consent
Relationships with Vulnerable Individuals
A General Concern for Ethical Practice

SUGGESTED READINGS

1. Clinical Psychology, E.G. Plante
2. Introducing Psychology 4th Ed., Rex Knight
4. Introduction to Psychology 6th Ed., John W. Santrock
5. Psychology & Life 7th Ed., Floyd L. Ruch
6. Psychology; Themes and Variations 5th Ed., Wayne Weiten
8. Psychology 6th Ed., David G. Myers
10. Social Psychology 7th Ed., David G. Myers
11. Advanced Social Psychology, Abraham Tesser
SYLLABUS FOR THE SUBJECT OF PUBLIC ADMINISTRATION
PAPER- I

Total Marks: 100

1. Public Administration: Definition, Concepts, Approaches and Context

   Definitions; Role and Scope of Public Administration in Society; Issues in Public Administration Theory and Practice – Democracy versus Bureaucracy, Politics versus Administration, Efficiency versus Equity; Core Values of Public Administration – Rule of Law, Efficiency, Equity and Fairness, Responsiveness; Traditional Public Administration; New Public Management; New Public Service; Governance Approach to Public Administration; Islamic Concept of Public Administration.

2. Public Organization: Classical and Contemporary Theories and Concepts

   Bureaucracy; Scientific Management; The Human Relations; Leadership, Motivation, Network; Governance; Strategic Management; Public Choice; Administrative Culture; Types of Organizational Structure; Organization of Federal, Provincial, and Local Government; Administrative Culture.

3. Public Policy Planning, Implementation and Evaluation

   Strategic Planning and Management; Planning Process; Policy Analysis; Policy Implementation; Program Evaluation; Planning Machinery; Role of Donors and International Institutions in Public Polity and Management.

4. Budgeting and Financial Management

   The Budget as a Policy Tool; The Budget as a Managerial Tool; Principles of Budgeting, Auditing and Accounting in Government; The Line-Item Budget; The Performance Budget; Program Budgeting; Zero-Base Budgeting; Outcome-Based Budgeting.

5. Managing Human Resources

   Spoil versus Merit System in Public Employment; Personnel versus Human Resources Management; Close versus Open System of Public Employment; Functions of Human Resources Management; Challenges of Adopting HRM in Public Sector.

6. Public Management Skills

   Communication; Decision Making, Conflict Management; Leading, Administrative Buffering; Managing Change; Managing Diversity; Stress Management; Delegation and Motivation; Creativity and Problem Solving; Issues of Public Management.

7. Governance and Administrative Reforms
Theories of Administrative Reforms; Types of Administrative Reforms – Privatization, Regulation, De-regulation, Decentralization, Business Re-engineering, Quality Assurance.

8. **Public Administration and Citizens**

   Bureaucratic Responsiveness; Representative Bureaucracy; Citizens Engagement in Public Service; The Concept and Approaches to Public Accountability of Public Service; Institutional Framework for Administrative Accountability; Administrative Corruption; Role of Civil Society in Good Governance.

9. **Public Administration and Development**

   Role of Public Administration in Development; Concept of Development Administration; Difference Between Development Administration and Development Management; Changing Role of Public Administration in Development.
1 - Organizational Structure of Federal Government and Administration

Constitutional Framework for Federal Government; Organization and Functions of Federal Secretariat; Organization and Functions of Federal Agencies/Authorities; Relationship between Ministries and Federal Agencies/Authorities; Inter-ministerial Coordination; Organization and Functions of Regulatory Agencies.

2 - Organization of Provincial and Local Government

Governance Structure of Provincial Administration; Organization of Provincial Secretariat; Organization and Functions of Provincial Authorities and Agencies and their Relationship with Government Departments; Post-devolution Local Governance; Organization and Functions of District Government and Administration; Organization and Structure of City District Government; Issues and Challenges of Local Governance.

3 - Intergovernmental Relationship


4 - The Civil Service

Historical Background of Civil Service, The Structure of Civil Service; History of Civil Service Reform; Management of Civil Service; Institutional and Cultural Context of Civil Service; Role of Civil Service in Good Governance, Women and Civil Service.

5 - Public Policy and Planning

Institutional Framework for Policy Coordination and Planning; Policy and Planning Process; Role of Planning Commission in Policy and Planning; Strategic Planning in Federal, Provincial Government and Local Government; Role of International Donors in Policy Formulation; Public Policy and Implementation in Key Sectors (i.e., Health, Education).

6 - Financial Administration

Structure and Functions of Revenue Administration; Budgetary Process in the Federal, Provincial and Local Government; Tax Administration; Accounting and Auditing System; Issue and Challenges of Fiscal Decentralization.

7 - Managing Human Resources

8 - Development Governance and Management

Approaches to Managing Development; History of Development and Public Administration with Particular Reference to Pakistan; Changing Role of Bureaucracy in Development; Role of Civil Society in Development; Role of International Institutions in Development Policy and Management.

RECOMMENDED BOOKS


1. Introduction To Social Welfare
   a) Definition and Scope
   b) Historical Perspective of Social Welfare in Pakistan

2. Pakistani Society
   a) Definition and description of the term “Society”
   b) Characteristics of Pakistani Society
   c) Comparison of Rural and Urban Communities

3. Culture
   a) Definition and description of the term “Culture” and its importance
   b) Characteristics of Pakistani Culture
   c) Influence of allied cultures on Pakistani Culture
   d) Social norms-definition and stages (i.e. folkways, more and laws)
   e) Socialization-definition and description and factors of socialization (i.e. Family, Neighborhood, Peer group, Religious Institute. Educational Institutions, Mass media and Communication.

4. Social Institutions
   a) Definition and description of “Social Institutions”
   b) Types of Social Institutions: Primary, Secondary
   c) Functions of the following:
      - Family Institution - Religious Institution
      - Political Institution - Economic Institution
      - Educational Institution - Recreational Institution
   d) Importance of social institutions.

5. Social Change
   a) Definition and area of “Social Change”
   b) Process and effects of social change on Society
   c) Factors which promote and hinder social change
6. **Social Problems of Pakistan**

   a) Major and explanation of social problems
   b) General causes of social problems
   c) Major social problems of Pakistan (An orientation)

   - Drug addition
   - Over population
   - Juvenile delinquency
   - Crime
   - Child labor
   - Child abuse and neglect
   - Bonded labor
   - Poverty
   - Unemployment
   - Illiteracy
   - Beggary
   - Environment
   - Violence

**RECOMMENDED BOOKS:**

7. Sociology and Social Change, Amanda Coffey, open University Press, Celtic Court 22 Ball moor Buckingham MK 18 IXW.
1. **Nature and Philosophy of Social Work**
   a. Definition and philosophical base of social work
   b. Objectives of social work practice
   c. Basic principles of social work
   d. Professional and voluntary social work

2. **Islam and Social Work**
   a. Islamic concept of social welfare and professional social work.
   b. Worth and dignity of individual.
   c. Rights and responsibilities of individuals in Islamic Society.
   d. Social relationship in Islam i.e. Family, Neighborhood, Mosque.

3. **Methods of Social Work**

   **PRIMARY METHODS**
   
   **i. Social Casework**
   a) Definition and description of social case work
   b) Elements/Components of social case work (person, problem, place, professional person and process)
   c) Principles of social case work
   d) Phases/steps in social case work
   e) Fields of application of social case work practice
   f) Role of Professional worker in case work practice

   **ii. Social Group work**
   a) Definition and description of social group
   b) Types of social groups (primary and secondary, formal and informal groups)
   c) Stages of group development
   d) Definition of social group work and its philosophy
   e) Objectives of social group work
   f) Components of social group work (group, agency, and group worker)
   g) Principles of social group work
   h) Fields of application of group work practice
   i) Role of professional worker in-group work practice
iii. Community Development

- a) Definition and description of community
- b) Definition of community organization and development
- c) Objectives of Community Development
- d) Phases/steps in community development (study of monitoring and evaluation)
- e) Principles of community development
- f) Role of professional worker in community

SECONDARY METHODS

i) Social Research

- a) Definition and description of social research
- b) Phases/steps in social research
- c) Tools of data collection (questionnaire, interviewing schedule, Interview guide and observation)

ii) Social Action, Policy and Administration

- a) Definition and description of social welfare administration
- b) Importance of social welfare administration in social work

iii) Social Action

- a) Definition and description of social action
- b) Importance of social action in social welfare

4. Fields/Area of Social Work

- a) School social work
- b) Medical social work
- c) Community development
- d) Child welfare
- e) Youth welfare
- f) Women welfare
- g) Welfare of the Physically disabled
- h) Welfare of the mentally retarded
- i) Welfare of the socially dis-advantaged
- j) Welfare of the Juvenile Delinquents and Adult Criminals
5. Role of Voluntary Social Welfare Agencies in Socio-Economic Development

   a) Definition and description of social welfare agency
   b) Types of social welfare agencies (government, semi-government, voluntary/NGOs)
   c) Role of the voluntary social welfare agencies, socio-economic development

RECOMMENDED BOOKS

4. Richmond, Mary, E. Social Diagnosis, New York, Russell Foundation
SYLLABUS FOR THE SUBJECT OF SOCIAL WORK

Paper-I

Total Marks: 100

1. Introduction To Social Welfare
   c) Definition and Scope
   d) Historical Perspective of Social Welfare in Pakistan

2. Pakistani Society
   d) Definition and description of the term “Society”
   e) Characteristics of Pakistani Society
   f) Comparison of Rural and Urban Communities

3. Culture
   f) Definition and description of the term “Culture” and its importance
   g) Characteristics of Pakistani Culture
   h) Influence of allied cultures on Pakistani Culture
   i) Social norms-definition and stages (i.e. folkways, more and laws)
   j) Socialization-definition and description and factors of socialization
      (i.e. Family, Neighborhood, Peer group, Religious Institute.
      Educational Institutions, Mass media and Communication.

4. Social Institutions
   e) Definition and description of “Social Institutions”
   f) Types of Social Institutions: Primary, Secondary
   g) Functions of the following:
      - Family Institution - Religious Institution
      - Political Institution - Economic Institution
      - Educational Institution - Recreational Institution
   h) Importance of social institutions.

5. Social Change
   d) Definition and area of “Social Change”
   e) Process and effects of social change on Society
   f) Factors which promote and hinder social change
6. Social Problems of Pakistan

d) Major and explanation of social problems
e) General causes of social problems
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- Over population
- Juvenile delinquency
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- Child abuse and neglect
- Bonded labor
- Poverty
- Unemployment

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- Environment
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   a. Islamic concept of social welfare and professional social work.
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4. **Methods of Social Work**
   
   **PRIMARY METHODS**

   i. **Social Casework**
      
      g) Definition and description of social casework
      h) Elements/Components of social casework (person, problem, place, professional person and process)
      i) Principles of social casework
      j) Phases/steps in social casework
      k) Fields of application of social casework practice
      l) Role of Professional worker in casework practice

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      j) Definition and description of social group
      k) Types of social groups (primary and secondary, formal and informal groups)
      l) Stages of group development
      m) Definition of social group work and its philosophy
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      o) Components of social group work (group, agency, and group worker)
      p) Principles of social group work
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  h) Definition of community organization and development
  i) Objectives of Community Development
  j) Phases/steps in community development (study of monitoring and evaluation)
  k) Principles of community development
  l) Role of professional worker in community

SECONDARY METHODS

i) Social Research

  a) Definition and description of social research
  b) Phases/steps in social research
  c) Tools of data collection (questionnaire, interviewing schedule, Interview guide and observation)

ii) Social Action, Policy and Administration

  c) Definition and description of social welfare administration
  d) Importance of social welfare administration in social work

iii) Social Action

  c) Definition and description of social action
  d) Importance of social action in social welfare

4. Fields/Area of Social Work

  k) School social work
  l) Medical social work
  m) Community development
  n) Child welfare
  o) Youth welfare
  p) Women welfare
  q) Welfare of the Physically disabled
  r) Welfare of the mentally retarded
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d) Definition and description of social welfare agency
e) Types of social welfare agencies (government, semi-government, voluntary/NGOs)
f) Role of the voluntary social welfare agencies, socio-economic development

**RECOMMENDED BOOKS**

4. Richmond, Mary, E. Social Diagnosis, New York, Russell Foundation
SYLLABUS FOR THE SUBJECT OF SOCIOLOGY
PAPER – I
PRINCIPLES OF SOCIOLOGY

Total Marks: 100

1. INTRODUCTION
   i. Definition of Sociology
   ii. Culture and Society
   iii. Socialization, Norms, Values, Status and Roles
   iv. Sociological Perspectives
       a. Structuralism
       b. Interpretive theories
       c. Modernism And Postmodernism

2. FAMILIES AND HOUSEHOLDS
   i. Sociological perspectives on the family
       a. The functionalist perspective
       b. The traditional Marxist perspective
       c. Marxist feminist and radical feminist perspective on the family
   ii. Family ideology
   iii. Politics, Social Policy and the family
   iv. Is the family a declining social institution?

3. SEX AND GENDER
   i. Sex: A Biological Distinction
   ii. Gender: A Cultural Distinction
       a. Gender in global perspective
       b. Patriarchy and sexism
   iii. Gender Socialization
       a. Gender and the family
       b. Gender and the peer group
       c. Gender and schooling
       d. Gender and the mass media
iv. Gender Stratification
   a. Working men and women
   b. Housework: women’s “second shift”
   c. Gender, income and wealth
   d. Gender and education
   e. Gender and politics
   f. Gender and the Military
   g. Are women a minority?
   h. Minority women
   i. Violence against women

v. Theoretical analysis of gender
   a. Structural-Functional Analysis
   b. Social-conflict analysis

vi. Feminism
   a. Basic feminist ideas
   b. Variations within feminism
   c. Opposition to feminism

4. Health
   i. What is meant by ‘health’, ‘illness’ and ‘disease’?
   ii. Disability
   iii. The medical and social models of health
       a. The medical (biomedical) model of health
       b. The social model of health
   iv. Becoming a health statistic
   v. Medicine and social control; the sick role
       a. Features of the sick role
   vi. The power of the medical profession
       a. Protecting the patient
       b. Criticisms of the medical professions
       c. The erosion of medical power?
   vii. Marxist approaches to health and medicine
   viii. How society influences health
        a. Improvements in health in the nineteenth and early twentieth centuries
   ix. The new ‘disease burden’
        a. What are the causes of these new diseases?
Inequalities in health
   a. Social class inequalities in health
   b. Gender differences in health

Inequalities in health
   a. Funding
   b. Geography
   c. Social Class
   d. Disability

Mental illness
   a. What is mental illness?
   b. Care in the community
   c. The biomedical approach to mental illness
   d. The social construction of mental illness

5. THE MASS MEDIA

1) The power of the media
2) Ownership of the mass media
3) The mass media and ideology
4) Do the owners of the media control their content?
   a. The manipulative or instrumentalist approach
   b. The dominant ideology or hegemonic approach
   c. The pluralist approach
5) Violence and the media
6) What affects the content of the media? Bias in the media
   a. The owners
   b. Making a profit
   c. Organizational constraints
   d. Agenda-setting
   e. Gate-keeping
   f. Norm-setting
7) The presentation and social construction of the news
   a. Inaccurate and false reporting
   b. News values and ‘newsworthiness’
c. The assumptions and activities of journalists

8) The media, crime and deviance

9) Media Representation and Stereotyping
   a. Media representations of age
   b. Media representations of social class
   c. Media representations of ethnicity
   d. Media representations of gender
   e. Media representations of disability

10) The mass media and mass culture
   a. ‘Mass culture’
   b. ‘High culture’
   c. A Marxist view of mass culture
   d. Criticism of the idea of a ‘mass culture’

6. EDUCATION
   1. The Function of Schooling
      a. Socialization
      b. Culture Innovation
      c. Social Integration
      d. Social Placement
      e. Latent Functions of Schooling

   2. Schooling and social Inequality
      a. Social control
      b. Standardized testing
      c. School tracking
      d. Inequality among schools
      e. Access to higher education
      f. Credentialism
      g. Privilege and personal merit
7. COLLECTIVE BEHAVIOR AND SOCIAL MOVEMENTS
   1. Localized Collectives: Crowds
      a. Mobs and riots
      b. Crowds, mobs and social change
      c. Explaining crowd behavior
   2. Dispersed collectives: mass behavior
      a. Rumor and gossip
      b. Public opinion and propaganda
      c. Panic and mass hysteria
      d. Fashions and fads
   3. Social Movement
      a. Types of social movements
      b. Explaining social movements
      c. Gender and social movements
      d. Stages and social movements
      e. Social movements and social change
      f. Social engineering

8. ENVIRONMENT AND SOCIETY
   1. Ecology: The study of the natural environment
      a. The role of sociology
      b. The global dimension
      c. The historical dimension
      d. Population increase
      e. Cultural patterns: growth and limits
   2. Environmental Issues
      a. Solid waste: the disposable society
      b. Preserving clean water
      c. Cleaning the air
      d. Acid rain
      e. The rain forests
3. Society and the environment: theoretical analysis
   a. Structural-functional analysis
   b. Cultural ecology
   c. Social-conflict analysis
   d. Alternative dispute resolution
   e. Environmental racism

9. RELIGION IN MODERN SOCIETY
   a. Sociological theories and ideas
      a. Sociological study of religion
      b. Theories of religion
   b. Real world religions
      a. Totemism and animism
      b. Judaism, Christianity and Islam
      c. The religions of the Far East
      d. Religious organizations
   c. Secularization and religious revival

10. POLITICS AND GOVERNMENT
    1. Power and Authority
       i. Traditional authority
       ii. Regional-legal authority
       iii. Charismatic authority
    2. Politics in global perspective
       i. Monarchy
       ii. Democracy
       iii. Authoritarianism
       iv. Totalitarianism
       v. A Global political system?
3. Theoretical analysis of power in society
   i. The pluralist model: the people rule
   ii. The Power-elite model: a few people rule
   iii. The Marxist model: bias in the system itself

4. Power beyond the rules
   i. Revolution
   ii. Terrorism

5. War And Peace
   i. The causes of war
   ii. The costs and causes of militarism
   iii. Nuclear weapons
   iv. The pursuit of peace

11. POPULATION AND URBANIZATION

1. Demography: the study of population
   i. Fertility
   ii. Mortality
   iii. Migration
   iv. Population growth
   v. Population composition

2. History and Theory of Population Growth
   i. Malthusian theory
   ii. Demographic transition theory
   iii. Global population today: a brief survey
1. **SOCIOLOGICAL METHODS**

1) Influences on the choice of research method
   a. Positivism and research methods
   b. Interpretive research methods
   c. Other influences on the choice of research methods

2) Key issues in social research
   a. Validity
   b. Reliability
   c. Ethics

3) Primary and Secondary data

4) Qualitative secondary sources
   a. The advantage and uses of qualitative secondary sources
   b. The disadvantages and limitations of qualitative secondary sources
   c. Content analysis

5) Qualitative secondary sources
   a. The advantages and uses of official statistics
   b. The problems and limitations of official statistics

6) The experimental (laboratory) methods of research
   a. Problems of using the experimental method in sociology
   b. Field experiments

7) The Comparative methods

8) Surveys and sampling methods
   a. Who uses the survey method?
   b. Representativeness and sampling
   c. The stages of a survey
   d. Problems of the social survey
9) Questionnaires
   a. The nature and use of questionnaires
   b. Questionnaire design: principle and problems
   c. Types of questionnaires
   d. The validity of questionnaire research
10) Interviews
    a. Structure of formal interviews
    b. Unstructured or informal interviews
    c. General problems of interviews
    d. Concluding remarks on interviews
11) Participant observation
    a. The theoretical context of participant observation
    b. The stages of participant observation and related problems
    c. The strengths and weakness as of participant observation
    d. Internal and external consistency in participant observation
12) Non-participant observation
13) Longitudinal studies
14) Case studies and life histories
15) Methodological pluralism and triangulation
16) Doing your own research
    a. Hypothesis or aim
    b. Context and concepts
    c. Main research methods and reasons for their use
    d. Potential problems
17) An example of coursework proposal
2. **GLOBALIZATION AND SOCIAL CHANGE**

1. Globalization
   i. Factors contributing to globalization
   ii. The globalization debate
   iii. The impact of globalization
   iv. Global Interdependence

2. What is Social Change?
   a. Globalization: Essential Features
   b. Causes and consequences of social change
   c. Factors contributing to globalization
   d. The globalization debate
   e. The impact of globalization

3. Innovations
   i. International tourism
      Changes in the ways people relate to information
      The cultural base and the rate of change
   Cultural lag
   Revolutionary ideas
   ii. Conflict
      The cold war origin of the internet
   iii. The pursuit of profit
   World system theory
   Responses to economic stagnation

3. **GLOBAL INEQUALITY**

1. Global economic inequality
   i. High-income countries
   ii. Middle-income countries
   iii. Low-income countries
iv. Is global economic inequality increasing?

2. Life in rich and poor countries
   v. Health
   vi. Hunger, malnutrition and famine
   vii. Education and Literacy

3. Can poor countries become rich?
   i. Theories of development
   ii. Evaluating theories of development
   iii. The role of international organizations and global inequality
   iv. Global economic inequality in a changing world

4. World population growth
   i. Population analysis: demography
   ii. Dynamics of population change
   iii. Malthusianism
   iv. The demographic transition
   v. Prospects of change

4. CRIME AND DEVIANCE

1. Basic concepts
2. Explaining crime and deviance: sociological theories
   i. Functionalist Theories
   ii. Integrationist theory
   iii. Conflict theories: ‘the new criminology’
   iv. Control theories
   v. Theoretical conclusions
3. Patterns of crime in Pakistan
   i. Crime and crime statistics

4. Victims and perpetrators of crime
   i. Gender and crime
   ii. Youth and crime
   iii. White-collar crime
   iv. Organized crime
   v. Cyber crime

5. Prisons: is it the answer to crime?

6. Conclusion: deviance and social order

List of Readings


SYLLABUS FOR THE SUBJECT OF STATISTICS
PAPER– I

Descriptive Statistics: (15%)


Concepts of Probability: (05%)


Random Variable: (15%)


Discrete Probability Distributions: (15%)

Uniform Bernoulli, Binomial, Multinomial, Hypergeometric, Poisson, Negative Binomial and Geometric distributions with their derivations, applications and fitting to statistical data. Poisson approximation to the binomial distribution.

Continuous Probability Distributions: (15%)

Uniform, Exponential and Normal distributions. Their properties, applications and fitting to statistical data. Normal approximation to the Binomial and Poisson distributions.

Bivariate Normal Distribution (10%):

Derivation, conditional density function, conditional expectation and moment generating function $\mu_{20}$, $\mu_{02}$ and $\mu_{11}$.

Method of Least Squares: (15%)

Scatter diagram, Principle of least square. Deduction and solution of normal equations of general linear model. Curve fitting. Equations of approximating curves by the method of least squares up to third degree polynomials. Fitting of exponential of the type (1)$y=ae^{bx}$ (2) $y = ab^x$ (3) $y = ax^b$. Graphic representation of the curves. Interpolation and Extrapolation graphically. Criteria for fitting a suitable curve.

Regression and Correlation Analysis: (10%)

Sampling and Sampling Distributions: (15%)


Estimation: (10%)


Interval estimator and its interpretation. Interval estimation of the mean / proportion, difference between two means / proportions, of populations with known and unknown variances. Determination of sample size. Interval estimation of population variance and ratio of two population variances. Interval estimates of regression parameters, mean and individual prediction.

Hypothesis Testing: (15%)

Null and alternative hypotheses. Simple and composite hypotheses. Two types of errors, level of significance, p-value and power of the test. Acceptance and rejection regions, one sided and two sided tests. Testing of hypothesis for mean / proportion, difference between two means / proportions.

Testing of hypothesis (based on small samples and unknown population variance) for the mean, difference between two means for paired and independent observations. Testing of hypothesis about the variances and equality of two variances.


Non-Parametric Tests: (5%)

**Analysis of Variance and Experimental Designs: (15%)**

Definition, importance and assumptions of Analysis of Variance. Partitioning of sum of squares and degrees of freedom in one and two-way classification. Testing the equality of means for one and two-way classification. Multiple comparison tests: Least significant difference test, Duncan's and Newman-Keuls Multiple range tests.

Principles of experimental design. Completely randomised, randomised complete block and Latif square designs. Description, layout, statistical analysis, advantages, disadvantages, relative efficiency and applications of these designs.

**Time Series: (10%)**

Decomposition of Time Series. Measurement of Trend, Seasonal (Additive and multiplicative models), and Cyclical variations. Seasonal indices. Deseasonalisation of data.

**Index Numbers: (10%)**


**Official Statistics: (10%)**


Applications of statistics in social, economic and political problems. Public health crimes, Law, social innovations, economic development and socio-political inequality.

**Vital Statistics: (10%)**

BOOKS RECOMMENDED:

SYLLABUS FOR THE SUBJECT OF ZOOLOGY

PAPER – I

Invertebrate and Chordate Zoology

Section – A

Invertebrate: Introduction General organizations (Structure, function, mode of life, Reproduction, life cycles, adaptation, distribution and Economic Importance) of the Following groups with special reference to the Topic mentioned in each group:-


Porifera: Multicellular and Tissue level of organization: origin and Evolutionary perspective, Evolutions of canal system, skeleton and Reproductive System in Porifera.

Coelenterata: Boy wall and Nematocysts, Polymorphism, Coral and Coral reefs, Economic Importance of Coral reefs.

Platyhelmenthes: The Triploblastic Acoelomate Body plan: Evolutionary perspective, Parasitic adaptation, life cycle of Fasciola Hepatica (liver fluke)

Nematoda The Pseudocoelomate Body Plan:


Ammelida: The Metameric Body Form: Evolutionary relationship with other animals, Metamerism and Tagmatization, Phylogenetic Consideration.

Mollusca: Origin of Coelome, Diversity in Gastropods, Bivalve and Cepholopods, Torsion, shell in Mollusca, modification of foot in Mollusca

Arthropoda: Evolutionary Perspective, Metamorphosis, Ecdysis, Appendages feeding, Respiration, Social insect, Economic Importance of Insects, Larvae in various Classes of Arthropoda.

Section – B

Chordata: Origin and basic plan of chordate, basic plane of vertebrate body, Earliest known vertebrate, Primitive jawed vertebrate, Evolution of jaw in vertebrate, Swimblader in Fishes, Excretion and Osmoregulation.

Amphibian: First terrestrial vertebrates: Evolutionary perspective, Excretion and Osmoregulation, Reproduction and development.

Reptile: The First Amniotes Evolution of Reptile, Rise and Fall of Reptile, Extinction of Dinosaurs, Excretion and Osmoragulation, Poisonous apparatus and biting mechanism of poisonous snake.


Mammalia: Specialized teeth, Endothermy: Origin of mammals, Evolutionary perspectives, Diversity among mammals, adaptation in External Structure and Locomotion, vertebrate Excretion, osmoregulation, Reproduction and development, Dentition in vertebrae, Comparative account of Evolution of Heart, gridsle Skull, development, nervous system, Stomach in the vertebrate and urinogenital ducts in vertebrates;
BOOKS RECOMMENDED (LATEST EDITION)


PAPER -II

General Zoology

SECTION-A

Cell Biology:

Generalized Structure of Prokayotic and Eukaryotic Cell, Morphology, chemical composition and Functions of cellular organelles, Enzymes Catalysis, Regulation & Inhibition, Metabolic Pathways, Glycolysis, Kreb cycle and Electrons Transport chain. Nucleic acid, Mechanism of Protein synthesis, Transcription and Translation, Mitosis, Meiosis.

SECTION -B

General Physiology:


SECTION -C


Section -D

Evolution: Theories of origin of Life, Biochemical origin of life, Lamarckism, Darwinism and Neo-Darwinism, Hardy Weinberg Principle, Mutation Pressure, Selection Pressure, Genetic drift species concept, Mechanism of evolution, modern concept of Natural Selection, Adaptive radiation.
SECTION – E

Ecology:

Concept of Ecosystem. Biogeochemical cycle, Animal adaptation to major Habitats, Energy flow in the Ecosystem, Food chain, Food web, Productivity of Ecosystem Environmental Pollution, Water Pollution and Lamo Pollution.

BOOKS RECOMMENDED (Latest Edition):

11. Robert F. Weaver, Philip W. Hedick, Basic Genetics.WCB.
15. Scheeler, P. and Bianchi, D., Cell and Molecular Biology.
HISTORY OF MODERN WORLD
PAPER - 1

Total Marks: 100

History: Various Concepts of perceiving History.
Modern: Connotation of the terminology.
World: How the idea of world is perceived. Implications of world history.

1. **TOWARDS GLOBALIZATION**
   

2. **TRANSFORMATION FROM OLD REGIMES TO MODERNITY**
   
   The Last Great Domestication and Industrious Revolutions, New Patterns of Afro-Asian Material Culture, Production and Trade, Trade Finance and Innovation: European Competitive advantages, the development of Asian and African Publics.

3. **CONVERGING REVOLUTIONS**
   
   Anatomy of the World Crisis (1720-1820), Sapping the legitimacy of the State: From France to China Ideological origin of the modern left and the modern state, Nationalities VS States and Empires. The Third Revolution: Polite and Commercial Peoples Worldwide.

4. **MODERN WORLD IN GENESIS**
   
   World revolutions (1815-1865), Emigration, New World Order: 1815-1865, Wars of Legitimacy in Asia, Economic and Ideological Roots of Asian Revolutions, Hunger and Rebellion in Europe (1848-1851), American Civil War as a Global Event.

5. **INDUSTRIALIZATION AND THE NEW CITY HISTORIANS**
   

6. **NATION, EMPIRE, AND ETHNICITY, C. 1860-1900**
   
   Theories of Nationalism, When was Nationalism Born? Perpetuating Nationalisms: Memories, National Associations, and Print, From Community to Nation: The Eurasian Empires Where we Stand with Nationalism, Peoples without States:
7. MYTHS AND TECHNOLOGIES OF THE MODERN STATE DIMENSIONS OF THE MODERN STATE


8. THE THEORY AND PRACTICE OF LIBERALISM, RATIONALISM, SOCIALISM, AND SCIENCE


9. SOCIAL AND INTELLECTUAL MOVEMENTS

Revolutionary Ideas, Philosophical and social trends.

10. Clash of Civilizations

11. Neo-Conservation

RECOMMENDED TEXTS AND LITERATURE REVIEWS

1. Dorinda Outram, The Body and the French Revolution
2. Frenc Feher, French revolution and the Birth of Modernity
3. H Kissinger, Diplomacy
4. J M Thompson, Napoleon Bonaparte: His Rise and Fall
5. E J Hobsbawn, The Age of revolution, 1789-1848
7. P Pilbeam, The 1830 Revolution in France
8. Paul Kennedy, The Rise and Fall of Great Powers
10. Peter Burke, Popular Culture in Early Modern Europe (1978)
11. Marc Bloch, Feudal Society
15. Lauro Martines, Power and Imagination; City-States in Renaissance Italy (1988)
16. Karl Marx, Das Capital
21. Michel Foucault, Madness and Civilization
23. Gertrude Himmelfarb, Darwin and the Darwinian Revolution (1968)
27. WD Smith, European Imperialism in the Nineteenth and Twentieth Centuries.
PAPER - II

HISTORY OF SOUTH ASIA
From Pre-historic to 18th Century AD

Total Marks: 100

Part – I

1. Approaches to Ancient & Medieval India
2. Indus Valley Civilization
3. The Vedas & The Vedic Age
5. Buddhism
6. Ashoka, Kanishka and the Gandhara Art
7. Emergence and Development of Caste System
8. Economy (Trade, Commerce, Industry)
9. LAW AND ADMINISTRATION: Code of law, values and tradition. Sharia, Akhlaq as law system of governance.
10. Sources of the Mughal Rule in India
11. BHAKTI MOVEMENT: Salient features of Bhakti movement, main proponents/saints, Bhakti literature and revolt against religious orthodoxy and central government/power.
12. DEVELOPMENT OF ARTS AND SCIENCES IN THE SUBCONTINENT: Sanskrit, Persian, Urdu, and Prakrit (local languages) literature with particular reference to humanist, political, regional and religious aspects. Relationship of power and language in medieval India.

HISTORY OF SOUTH ASIA
(From 18-21 Centuries)

Part-II

1. Concepts of Colonialism & Imperialism
2. Extracting land Revenue, Empire and Colonial Economy.
5. Sir Syed’s efforts for re-interpreting religion and modernizing the Muslim Society and resistance of Ulema. Use of modern technologies by various religious
revivalist/orthodox movements (e.g., Deobandi Movement) and displacement of Sufi tradition.

6. Colonial project of assigning identities and Emergence of Nationalism in India: Dividing India in religious, communal/secular, regional, gender and racial/tribal lines.


10. Problems of federal politics, Ethnic and sub-national ideologies, use of language as culture and ideology.

**RECOMMENDED BOOKS:**

1. Aziz Ahmad, *An Intellectual History of Islam in India*
2. ---------------, *Studies on Islamic Culture in the Indian Environment*
3. SM Ikram, *Muslim Rule in India*
4. Daniel W Browne, *Rethinking Tradition in Modern Islamic Thought*
5. Muzaffar Alam, *The Languages of Political Islam in India* (c. 1200-1800)
10. SAA Rizvi, *A History of Sufism in India*, 02 Volts (Delhi, 1978)
11. Francis Robinson, *Islam and Muslim History in South Asia* (Delhi, 2000)
13. Eugenia Vanina, *Ideas and Society in India*
14. Romila Thaper, *Early History of India*
15. Irfan Habeeb, *Agrarian System of Mughal India*
16. Sekhar Bandyopadhyay, *From Plessey to Partition*
17. Chaudhery Mohammad Ali, *The Emergence of Pakistan*
18. Khalid bin Saeed, *Pakistan: The Formative Phase*
20. Pandev Nayak, *Pakistan Society and Politics*
21. Ayesha Jalal, *Democracy and Authoritarianism in South Asia: A Comparative and Historical Perspective*
23. Ayesha Jalal, *Self and Sovereignty*
24. Farhat Mahmud, Pak-US Relations
25. Stephen Cohen, The Pakistan Army
26. Ralph Braibanti, Research on the Bureaucracy of Pakistan: A Critique of Sources, Conditions, and Issues
28. Lawrence Ziring, Pakistan in the 20th Century
SYLLABUS FOR THE SUBJECT OF GEOLOGY
PAPER - I

Total Marks: 100

Physical Geology: Earth as a member of the solar system; its origin, age, composition and internal structure. Geomorphic processes

Structural Geology: Physical properties of rocks and rock behavior in different tectonic environments; deformation by fracturing and folding; interpretation of linear and planar elements.

Paleontology: Paleontological principles and techniques and their application to the evolution of life, the ecological structure of ancient biological communities, and the history of the earth.

Stratigraphy and Sedimentology: Principles of stratigraphy; Stratigraphic record and nomenclature, Geological time scale, Stratigraphy of Salt Range. Origin, transportation and deposition of sediments; biostratigraphic dating and correlation; Sedimentary processes and environments.

Mineralogy/ Petrology: Crystal chemistry; crystal growth and mineral genesis, physicochemical principles governing crystal structures. Mineralogical, chemical, textural, and structural properties of igneous, metamorphic and sedimentary rocks; their origin and relations to evolution of the Earth crust and mantle including rocks of both the continents and ocean basins.

Geochemistry: chemical processes involved in the development of the earth and distribution of the elements in the earth’s crust, atmosphere and ocean. Physical chemistry of soils including soil mineralogy (formation, relative stability, ion exchange properties) and surface chemistry. Principles of thermodynamics. Application of thermochemistry to high and low temperature processes.
**Paper II**

**Total Marks: 100**

**Earth Resources:** Fossil fuels, Nuclear mineral resources, Renewable energy resources, hydropower and geothermal energy, Water cycle, Surface water, Ground water, construction materials including those for concrete and aggregate, sand gravels, cement making and building stones; Fundamentals of Metallogeny and plate tectonics with reference to Pakistan. Uranium and strategic metals.


**Remote Sensing and GIS:** Introduction to the filed of remote sensing. Earth satellite systems for remote sensing. Applications in geological mapping, mineral prospecting, structural geology, geohydrology, engineering geology and geomorphology. Principles of geographic information system (GIS) including an overview of data structure, data types, methods of data analysis and cartographic modeling.


**RECOMMENDED BOOKS**

SYLLABUS FOR THE SUBJECT OF LAW

PART- I

Total Marks: 100

i) Civil Procedure Code 1908. 50-Marks

ii) Limitation Act 1908, Registration Act, 1908

iii) Qanoon-e-Shahadat Order 1984 50-Marks

PART- II

Total Marks: 100

i) Pakistan Penal Code 1860 40 Marks

ii) Code of Criminal Procedure, 1898 40 Marks

iii) West Pakistan Land Revenue Act, 1967. 20 Marks
1. **RECOMMENDED BOOK OF CIVIL PROCEDURE CODE**

   i) The Code of Civil Procedure (Aamer Raza)
   
   ii) Code of Civil Procedure (PLD Publishers) (Bare Act)

2. **RECOMMENDED BOOK OF LIMITATION ACT**

   i) The Limitation Act by Shaukat Mahmood

3. **RECOMMENDED BOOK OF QANOON-E-SHAHADAT ORDER 1984**

   i) Qanoon-e-Shahadat Order 1984 (PLD Publishers)

4. **RECOMMENDED BOOK OF PAKISTAN PENAL CODE**

   i) Pakistan Penal Code by Shaukat Mahmood

5. **RECOMMENDED BOOK OF CRIMINAL PROCEDURE CODE**

   i) Criminal Procedure Code by M. Mahmood
   
   ii) **Bare Act** of Criminal Procedure Code

6. **RECOMMENDED BOOK OF LAND REVENUE ACT**

   i) Land Revenue Act by M. Mahmood or Land Revenue Act by M. Mokal
SYLLABUS FOR THE SUBJECT OF COMMERCE ACCOUNTING
PAPER-I

Total Marks: 100


B. Principles of cost account, cost accounting as a tool of management, cost elements. Cost classification, cost accounting cycle, Job order costing, process costing, factory overhead variances, standard costing, and break-even analysis.

SUGGESTED READING

1. Meigs & Meigs, Accounting
3. Ghani M.A. Advanced Accounting
4. Uzair Hussain, Advanced Accounting
5. Shukla & Grewal, Advanced Accounting.
6. Nisar ud Din, Cost Accounting
8. T. Lucey, Cost Accounting.
9. S. Naqvi Ahmad, Cost Accounting
PAPER- II
GENERAL COMMERCIAL KNOWLEDGE

Total Marks: 100


C. Risk management, external audit and submission of audit reports.

D. Various forms of business organization. Sole proprietorship partnership, joint stock Company, their formation & management, capital structure & capital budgeting, business finance, its sources, short term & long term.


SUGGESTED READING:

7. M. Muazzam Moghal, Sales Tax Law.
12. Adam, Ronald & Ebart, Production & Operation Management.
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Recommended Books

1. 1 کتاب ای پی ہوائی ہائی 1987
2. 9 کتاب ای پی ہوائی 1987
3. 3 کتاب ای پی ہوائی 1987
4. 5 کتاب ای پی ہوائی 1987
5. 2 کتاب ای پی ہوائی 1987
6. 7 کتاب ای پی ہوائی 1987
7. 6 کتاب ای پی ہوائی 1987
8. 8 کتاب ای پی ہوائی 1987
9. 4 کتاب ای پی ہوائی 1987
10. 12 کتاب ای پی ہوائی 1987
11. 11 کتاب ای پی ہوائی 1987
12. 10 کتاب ای پی ہوائی 1987
13. 6 کتاب ای پی ہوائی 1987
14. 5 کتاب ای پی ہوائی 1987
15. 4 کتاب ای پی ہوائی 1987
16. 3 کتاب ای پی ہوائی 1987
دروسر کا جائزہ

1- دہشتگری نیپال وادی کی تاریخ
   1.1- دہشتگری نیپال وادی کی تاریخ
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2- دکل ادب
   2.1- تاریخ
   2.2- لوک کنیان
   2.3- دکل ادب

3- دکل ادب
   3.1- تاریخ
   3.2- لوک کنیان

کل نمبر 100

نمبر 20

نمبر 10

نمبر 25
Recommended Books

1. "Jahan-e-Ab-e-Dil" by Jahan-e-Shaheed
2. "Pakistan: A History" by Khurshid Iqbal
3. "The Collected Poems of Benazir Bhutto" by Benazir Bhutto
5. "Pakistan: A Nation of Contrasts" by Amin Zaidi
6. "The Green Revolution in Pakistan" by Muhammad Ali
7. "The Economy of Pakistan" by Masood Ahmad
8. "Pakistan: A Country of Visions" by Nazir Afzal Khan
10. "Pakistan: A Country of Challenges" by Amin Zaidi
10- مرآیاکان

11- تبرئہ ستیہ

12- سیکریتیاری (کارکرد)۔

13- تعلیمی دفتر وادی کے تاریخ۔

14- مرزا صاحب:۔

15- سیف اله مک:۔

16- اسکندر وار:۔

17- محسن دی وار:۔

18- ملائم دی وار (ایروز ولول مظهر خان)۔

19- اعلان دی پی:۔

20- پنجابی دی مٹیفس:۔

21- تاریخ دی پیسٹ سلمانی پاکستان بھی:۔

22- کم سک:۔

23- مئات دوارث شاہ:۔
خاکنصاب (اردو کتاب)

بجا کیا چپ

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1- ادب اور تاریخ ادب اردو
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اور اذیک کے اور اذیک کے)
ب) اور اذیک کے اور اذیک کے اور اذیک کے
ث) اور اذیک کے اور اذیک کے اور اذیک کے
(دیگر معلومات، تفصیلات، اذیک کے اذیک کے، اذیک کے اذیک کے)

2- اردو شکا سفر
الف) اردو شکا سفر
ب) اردو شکا سفر
ج) اردو شکا سفر

3- اردو کی تاریخ اور تصورات اور متعلقات
الف) اردو کی تاریخ اور تصورات اور متعلقات
ب) اردو کی تاریخ اور تصورات اور متعلقات

امداد کتب

اردو کتاب

اردو کتاب

نشریہ اوردو تاریخ
اردو کا تاریخ روشن کنندا
اردو کا تاریخ نوش
اردو کا تاریخ روشن کنندا
تاریخ ادیبیات سلیمانی بیک بنگر (اردو سے تعلق بہترین)
(تاریخ ادیبیات سلیمانی بیک بنگر)
(تاریخ ادیبیات سلیمانی بیک بنگر)
(تاریخ ادیبیات سلیمانی بیک بنگر)
(تاریخ ادیبیات سلیمانی بیک بنگر)
1. دفتری نقطہ یا دوغرست
2. ضمیر (ادبی، سائنسی، تاریخی، عماری موضوعات)
3. تلفیقی ایک ترکیب یا ترجمہ
4. تفسیری ترکیب مجرم‌تارخ (داستان، فلسفی، ادبی ترکیب (سی، شیعہ، برومندی اور بقی))
5. سفارتی اور تحقیقی مطالعات
6. سیرتی اور تحقیقی مطالعات
7. میزبانی یا بیانی
نظیر ایکرزا بادی (ختم تفیصی)
اسادالدخان غлюб (ختم غزیان)
علاء المجردی (بابغ دم)
من راشد (ابراهیم نه انگیز)
فیض احمد فیض (لیاقت فریادی)
چیداوید (شب رفیع)

امدادی کتاب

فیصلی ادب (ختم غزوات و نظمون کے لیے)
مرجیعی غزواتی محمد باقری
ختمی‌نی امیر طاهری
مرجیعی امیر طاهری
مرجیعی امیر طاهری
اردو ادب 1855ء کا مہام
لافتی نام
افشاالکنصل