

**FEDERAL PUBLIC SERVICE COMMISSION
(Curriculum & Research Wing)**

**Schemes and Syllabi for Screening/Professional Tests as well as Descriptive Examination
Relating to Posts Advertised under Consolidated Advertisement No. 03/2022**

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	40/2022	<p>Lecturer (Female) (BS-17), A. Arabic B. Biology C. Botany D. Business Administration E. Computer Science F. Economics G. English H. Fine Arts I. History J. Home Economics K. International Relations L. Islamic Studies M. Mathematics N. Pak Studies O. Physics P. Political Science Q. Psychology R. Sociology S. Statistics T. Urdu.</p> <p>Federal Government Educational Institutions Directorate, Cantts/ Garrisons Colleges, Ministry of Defence</p>	Second Class or Grade 'C' Master's degree or equivalent qualification in the relevant subject.	<p>Objective Type Test (MCQ) Part-I English = 20 marks Part-II Subject Test = 50 marks Part-III Professional Test = 30 marks Note:</p> <ul style="list-style-type: none"> ▪ In Language Subjects (i.e Arabic, Urdu and English), English part for 20 marks will not be included. There will be 70% subject Test and 30% Professional Test. 	<p><u>For (A) Arabic</u></p> <p><u>Part-I (Master's Level) (70 Marks)</u></p> <ul style="list-style-type: none"> ▪ History of Arabic literature ▪ Arabic Poetry at the Dawn of Islam ▪ Arabic Syntax ▪ Arabic Vocabulary, ▪ Arabic Grammar usage, ▪ Arabic Sentence Structure <p><u>Part-II (30 Marks)</u></p> <ul style="list-style-type: none"> ▪ Teaching Techniques and Methodology ▪ Classroom Management and Discipline ▪ Testing and Evaluation <p><u>For (B) Biology</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Theories of Evolution, • Multiple Alleles, • Nucleic Acids, • Cell Division, • Nutrition, • Ecosystem, • Mendelian laws of inheritance, • Diagnostic Characteristics of all the phyla or invertebrates and chordates, • Division of Plants <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

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					<p><u>For (C) Botany</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> ▪ Algae, ▪ Fungi, ▪ Bryophytes ▪ Pteridophytes ▪ Gymnosperms, ▪ Angiosperms, ▪ Plant Physiology, ▪ Ecology, ▪ Cytology, ▪ Genetics, <p><u>Part-III</u></p> <ul style="list-style-type: none"> ▪ Teaching Techniques and Methodology ▪ Classroom Management and Discipline ▪ Testing and Evaluation
					<p><u>For (D) Business Administration</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> ▪ Business Finance ▪ Principles of Management ▪ Business Law ▪ Business Research Methods ▪ Financial Management ▪ Marketing Management ▪ Production/Operation Management ▪ Management Information System <p><u>Part-III</u></p> <ul style="list-style-type: none"> ▪ Teaching Techniques and Methodology ▪ Classroom Management and Discipline ▪ Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (E) Computer Science</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Data Communication & Networking, • C/C++ Language, • Visual Basic, • Operating System Unix/Linux • Oracle/PLSQL, • System Analysis & Design, • Computer Architecture, • Operating System concepts, • Software Engineering, • Security and Ethical issues • Data Structures, • Management Information System, • Web Programming, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation <hr/> <p><u>For (F) Economics</u></p> <p><u>Part-I</u> Vocabulary, Grammar usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Micro Economics: Determination of market demand and supply • Macro Economics: Basic Economic Concepts • International Trade: Theories, Trade Restrictions & Trade Policy, • Economic Development: Historical growth development process and Theories, Structural Issues • WTO and Developing Economies, • Monetary Theory & Public Finance, • Agriculture Development in Pakistan • Industrial Development in Pakistan • Energy Crises and Policy in Pakistan • Interest Free Banking in Pakistan <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (G) English</u></p> <p><u>Part-I (Masters Level) (70 Marks)</u></p> <ul style="list-style-type: none"> • English Literature 16th to 20th Century. • Vocabulary • Structuring of sentences. • Linguistics. • English Language Teaching. • Grammar. • Syntax. • Diction. <p><u>Part-II (30 Marks)</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation <p><u>For (H) Fine Arts</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • History of Art, Design & Architecture • Elements of Art • Drawing & Design Theory • Linear Perspective • Elements & Principles of Image Making • Painting: Basic elements of Art, concepts, media and formats. • Printmaking: Basic elements of art and design principles, concepts, media, and formats. <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (I) History</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • The Prophetic Age (570-632) • The Pious Caliphate (632-660) • Political System of Islam under the Prophet (PBUH) and the Pious Caliphate (Nature of Islamic State, Form of Govt, Function of Islamic State, Caliphate Shura or the Consultative body and its role) • Institutional Development of the Muslim Civilisation (Umayyad, Abbasid, Crusade) • Muslim Freedom Movement in India (1857-1947) • Ideology of Pakistan • The Kashmir Issue • Pakistan and Neighbouring Countries • Research Methodology & Philosophy of History <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation <p><u>For (J) Home Economics</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Introduction to Home Economics • Fundamentals of Food and Nutrition • Nutrition Health and Prevention • Entrepreneurship for home based industry • House Keeping Management • Methods of Research in Home Economics • Childcare and Development Guidance • Family Problems and Intervention strategies <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p>For (K) International Relations</p> <p>Part-I Vocabulary, Grammar Usage, Sentence Structuring</p> <p>Part-II (Masters Level)</p> <ul style="list-style-type: none"> • The Definition and Scope of International Relations. • Theories and Approaches in International Relations • Terrorism, Globalization, Revival of Multipolarity • International Political Institution (IMF, World Bank) • India and Pakistan Relations • Kashmir Issue, • International Regional Organizations: EU, ASEAN, SAARC, WTO <p>Part-III</p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation
					<p>For (L) Islamic Studies</p> <p>Part-I Vocabulary, Grammar Usage, Sentence Structuring</p> <p>Part-II (Masters Level)</p> <p>☆ قرآن کا بنیادی موضوع / متن</p> <p>☆ سیرت النبی ﷺ</p> <p>☆ فقہ: جامعیت، اختلاف رائے اور عصر حاضر کے تناظر میں مذہب کی تشریح۔</p> <p>☆ تعارف اسلام</p> <p>☆ انسانی زندگی میں دین کی اہمیت</p> <p>☆ اسلام کے نمایاں پہلو</p> <p>☆ اسلامی عقائد کے انفرادی اور اجتماعی اثرات</p> <p>☆ انسانی حقوق۔ اسلام کی نظر میں</p> <p>☆ اسلام اور عصر حاضر کے چیلنجز</p> <p>☆ اسلامی نظام حکمرانی کا ڈھانچہ</p> <p>☆ سرکاری ملازمین کی ذمہ داریاں</p> <p>☆ اسلامی ضابطہ حیات</p> <p>Part-III</p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (M) Mathematics</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Calculus/Differentiation, Integration, Limits of continuity • Discrete Structures/Discrete Mathematics, • Communication Skills for Mathematicians, • Computing Tools for Mathematicians, • Classical Mechanics, • Mathematical Statistics, • Real Analysis, • Mathematical Spaces (Sets, Vector Spaces, Metric Spaces, topological spaces Tensors, • Differential Equations. <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation
					<p><u>For (N) Pak Studies</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Ideology of Pakistan in light of speeches and statements of Allama Iqbal and Quaid-e-Azam • Pakistan Movement 1857-1947 • Current Issues of Pakistan (challenges to National Security, Economic Challenges, Pakistan's War on Terror, • Geography of Pakistan <ul style="list-style-type: none"> ✓ Land and People of Pakistan ✓ Pakistan and CPEC ✓ Natural Resources of Pakistan, • Latest Constitutional Amendments, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (O) Physics</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Heat and Thermodynamics, • Waves and Optics, • Electrostatic, • Electricity and Magnetism, • Atomic and Modern Physics, • Nuclear Physics, • Basic Solid State Physics, • Basic Electronics, • Electrodynamics, • Mechanics <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation
					<p><u>For (P) Political Science</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Western Political Thought (Plato, Aristotle, Machiavelli, Montesquieu, Hobbes, Locke, Rousseau, Marx, Lenin, Frances Fukuyama) • Muslim Political Thought (Al-Farabi, Al-Mawardi, Imam Ghazali, Ibn Khaldun, Shah Waliullah, Allama Muhammad Iqbal) • State System: Islamic Concept • Political Institutions and Role of Government • Political Ideologies (Capitalism, Marxism, Communism, Nationalism, Islamic Political Ideology) • Government and Politics in Pakistan: Analysis of 1956, 1962, 1973 Constitutions • History of International Relations: Post World War-II Period. • Comparative Study of Political System (Turkey, India, Malaysia and China) <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (Q) Psychology</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Nature and Scope of Psychology • Developmental Psychology • Social Psychology • Educational Psychology • Counselling Psychology • Abnormal and Clinical Psychology • Organizational/Industrial Psychology • Forensic Psychology • Psychological Testing and Assessment • Research Methodology <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation <p><u>For (R) Sociology</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Meaning, Characteristics and Elements of Culture • Society: Meaning and Characteristics • Social Contract Theory & Organismic Theory • Sociological Theories (Ibn-i-Khaldun, Spencer, Max Weber, Karl Marx) • Methods of Sociological Research, • Social Institutions: Nature, Genesis & Function • Mechanism of Social Control: Formal & Informal • Social and Cultural Change & Social Policy: Processes & Effects • Community organization and development • Social Problems in Pakistan <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology, • Classroom Management and Discipline, • Testing and Evaluation,

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (S) Statistics</u></p> <p><u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><u>Part-II (Masters Level)</u></p> <ul style="list-style-type: none"> • Measures of Central Tendency, • Measures of Dispersion or Variation, • Regression and Correlation, • Index Numbers, • Probability Theory, • Probability Distributions, • Presentation of Data • Time Series Analysis, • Statistical Inference, • Sampling Theory and Techniques, • Analysis of Variance, • Experimental Design <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation
					<p><u>For (T) Urdu</u></p> <p><u>Part-I (Masters Level) (70 Marks)</u></p> <ul style="list-style-type: none"> • اردو ذہیرہ العاظ • اردو جملے کا ڈھانچہ • اردو قواعد کا ایسے عمال • لسانیات • عالیہیات • اہلیہیات • سہ • طرز و مزاج <p><u>Part-II (30 Marks)</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
2.	41/2022	Assistant Computer Officer (BS-16), AFIP, (GHQ Medical Directorate), Ministry Of Defence.	Second Class or Grade 'C' Master's Degree in Computer Science/ Information Technology or equivalent qualification from a University recognized by the Higher Education Commission. OR (i) Second Class or Grade 'C' Bachelor's Degree in Computer Science/ Information Technology or equivalent qualification from a University recognized by the Higher Education Commission. (ii) Two (2) years post qualification experience in Computer/ IT related field.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test =80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Computer Hardware/Software, • Data Communication & Networking, • C/C++ Language, • Visual Basic, • Operating System Unix/Linux • Windows 7, 8, 8.1, 10 • Oracle/PLSQL, • System Analysis & Design. • Web Programming,
3.	42/2022	Junior Scientific Officer (BS-16), AFIP, (GHQ Medical Directorate), Ministry Of Defence.	Second Class or Grade 'C' M.Sc. degree in Chemistry/ Biochemistry/ Microbiology or equivalent qualification from a University recognized by the Higher Education Commission.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II General Science Test=80 marks	Part-I Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Thermodynamics, • Nature, Properties and States of Matter, • Gases, Liquids & Solids, • Organic Chemistry • In-Organic Chemistry • Biochemistry • Human Physiology • Immunology • Mycology

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
4.	43/2022	Statistical Officer (BS-17), AFIP, (GHQ Medical Directorate), Ministry Of Defence.	(i) Second Class or Grade 'C' Master's degree in Statistics or equivalent qualification from a University recognized by the Higher Education Commission. (ii) Two (2) year post qualification experience in Statistics.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test = 80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Introduction to Statistics, • Presentation of Data, • Measures of Central Tendency, • Measures of Dispersion, • Index Numbers, • Simple Regression and Correlation, • Time Series Analysis, • Sampling Techniques, • Testing of Hypothesis, • Techniques of Research, • Report writing and presentation, • Basic Arithmetic and I.T Knowledge.
5.	47/2022	Assistant Director (Mining) (BS-17), Mineral Wing, Ministry of Energy (Petroleum Division).	Second Class or Grade 'C' B.Sc. Degree in Mining Engineering from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test= 80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Mining Engineering Fundamentals • Structural Geology • Engineering Mechanics • Fluid Mechanics • Engineering Statistics • Mechanics of Materials • Mine Surveying • Mineral Deposits in Pakistan
6.	48/2022	Assistant (BS-16), Gilgit Baltistan Secretariat, Ministry of Kashmir Affairs and Gilgit Baltistan.	Second Class or Grade "C" Bachelor's degree or equivalent qualification from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English =20 marks Part-II General Intelligence Test =80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Basic Arithmetic <ul style="list-style-type: none"> – Algebra – Ratios – Percentages – Arithmetic Means • Current Affairs. <ul style="list-style-type: none"> – Issues/Challenges at National and International Level during the last 2 years • Pakistan Affairs & Islamic Studies <ul style="list-style-type: none"> – Basic Level knowledge • Basic IT knowledge.

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
7.	49/2022	Assistant Naval Store Officer (BS-16), Naval Headquarters, Ministry of Defence.	(i) Second Class or Grade 'C' Bachelor's Degree. (ii) Three (3) years post qualification experience in Store Management. OR (i) Ex-Chief Petty Officers (CPOs)/ Petty Officers (POs). (ii) Matriculation or Higher Education Test (HET). (iii) Five (5) years post qualification experience in Store Management.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II General Intelligence/ Professional Test=80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • General Science • Basic knowledge of I.T • Procedures of Receipt and Issue of Stores • Stores procedures with relation to following topics:- <ul style="list-style-type: none"> a. Stock Taking b. Care and preservation of Equipment and Stores c. Ware House Management • Public Procurement Rules, 2004
8.	50/2022	Inspector (Photo) (BS-16), Federal Government Organization.	(i) Second Class or Grade 'C' Bachelor's of Science with Chemistry. (ii) Two (2) years post qualification experience in the field of Photography/ Videography. (iii) Proficiency in Computer. Stage-I: MCQ based Screening Test will be held for shortlisting of candidates. Stage-II: Subjective Type Technical Proficiency test (100 marks) will be conducted for short-listed candidates. The ratio of 1:8 (eight candidates per post) with qualifying standard of 50% marks will be followed at this stage.	Stage-I Objective Type Test (MCQ) Part-I English = 20 marks Part-II Qualification based Test=80 marks	Part-I Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> ▪ Electrochemistry ▪ Thermodynamics ▪ Chemical Kinetics ▪ Kinetic Theory of Gases. ▪ Nature, properties and states of matter. ▪ Thermo-chemistry. ▪ Radioactivity ▪ Knowledge of MS Office
				For Short-listed Candidates	
				Stage-II Subjective Test Technical Proficiency Test =100 marks Qualifying Standard= 50%	<ul style="list-style-type: none"> ▪ Functioning of different Still and Video Cameras ▪ Operation of DSLR Cameras. ▪ Photo Editing Softwares like Adobe Photoshop ▪ Techniques of Indoor/Outdoor Photography/ Videography.
9.	51/2022	Psychiatrist (BS-17), Anti Narcotics Force, Ministry of Narcotics Control.	i. MBBS or equivalent qualification recognized by PMDC. ii. Registration with PMDC. iii. Three (3) years post qualification experience in psychiatry field.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test =80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Core courses of MBBS degree program. • Diagnose and remedy in the following disorders: <ul style="list-style-type: none"> i. Mood disorders. ii. Anxiety disorders. iii. Schizophrenia.

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
10.	53/2022	<p>Data Processing Assistant (BS-16), Federal Government Organization.</p> <p>NOTE: To short list the candidates at first stage MCQs Screening Test shall be held. Thereafter subjective type IT Proficiency test of 100 marks will be conducted for shortlisted candidates at the ratio of 1:8 (eight candidates per post) with qualifying standard of 50% marks.</p>	<p>i. Second Class or Grade 'C' Bachelor's degree or equivalent in Computer Science.</p> <p>ii. Three (3) years post qualification experience in Computer Operation/ Data Processing/ Networking.</p>	<p>Objective Type Test (MCQ)</p> <p>Part-I</p> <p>English = 20 marks</p> <p>Part-II</p> <p>Professional Test=80 marks</p>	<p>Part-I</p> <p>Grammar Usage, Sentence Structuring</p> <p>Part-II</p> <ul style="list-style-type: none"> • Arithmetic Logical Unit, Memory (RAM, ROM) Types of RAM, Ports, etc. • Input and Output Devices, • Use of Microsoft Office (MS Word, MS Excel only) • Application and System Software, • Electronic Data Processing • Management Information System • Storage and Multimedia, • Network & Security Issues, • Relational Database Management System (RDBMS), <p>Note: For Pre-selected candidate, syllabus for Descriptive Test is at Page-15 below</p>
11.	59/2022	<p>Network System Engineer (BS-17), Bureau of Emigration and Overseas Employment, Ministry of Overseas Pakistanis and Human Resource Development.</p>	<p>Second Class or Grade 'C' Master's Degree in Computer Science/ BCS (4 years)/ IT/ Electronics or equivalent from a University recognized by the HEC.</p> <p>OR</p> <p>B.Sc. in Computer Engineering (Software) from a University recognized by the HEC.</p>	<p>Objective Type Test (MCQ)</p> <p>Part-I</p> <p>English = 20 marks</p> <p>Part-II</p> <p>Professional Test=80 marks</p>	<p>Part-I</p> <p>Vocabulary, Grammar Usage, Sentence Structuring</p> <p>Part-II</p> <ul style="list-style-type: none"> • Database Management System • Software Quality Assurance • Microsoft SQL Server • Software Maintenance • Software Development/Training • Software Architecture Design • Object Oriented Programming & Client-Server Programming • MIS Development and Reporting

SUBJECTIVE TYPE IT PROFICIENCY TEST

Max Marks: 100

Qualifying Standard 50%

Time Allowed: 3 Hours

Case No.	F.4-53/2022-R
Particulars of post	Data Processing Assistant (BS-16), Federal Government Organization.
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Bachelor's degree or equivalent in Computer Science. ii. Three (3) years post qualification experience in Computer Operation/ Data Processing/ Networking.

I. Introduction to Computing

Introduction to Information Technology and Computers, History of Computing, Computer HW and SW Details, Computer System Components and Communication System, Input & Output devices and their types, Storage Media and their types, Types of Computer Hardware, Information Security/Privacy, Computer Crimes and Ethical Challenges, Trees (Binary Trees, Binary Search trees, AVL Trees, Encryption Algorithms (DES, RSA), Design Concepts, Architectural Design, Design & Implementation, Project Management, Machine Instruction Characteristics, Instruction Processing, Processor Structure & Function, Control Unit Operation, Micro-programmed Control, Instruction-Level Parallelism And Superscalar Processors, Parallel Processing, Multi-Processor and Multi-core Systems.

II. Computer Communications & Networks

Basic Concepts and Classification of Networks, Circuit switching, Packet switching, Multiplexing (TDM, FDM), Layering: OSI and TCP/IP, Application Layer (Network application architectures, HTTP, FTP, Email, DNS, P2P applications), Transport Layer (Multiplexing in UDP and TCP, Connectionless Transport: UDP, Reliable data transfer and TCP, Congestion avoidance and control), Network Layer (The Internet Protocol, IPv4 Datagram, Internet Address Classes, Special IP Addresses ARP, IPv6, ICMP, Network Address Translation (NAT), Internet Routing Protocols and Algorithms, X.25, Frame relay and ATM, MPLS), Physical & Link Layer Functionalities (Error Detection & Control, ARQ, Link layer addressing, LAN Technologies, Bridges and Hubs, Multiple Access), Special topics (Security, Overlay networks, naming, Content distribution networks, Peer to peer systems, DHTs, Network Attacks).

III. Database Systems

Introduction to Database Systems, Relational Data Model & Relational Database Constraints, Relational Data Model, SQL, Relational Algebra & Calculus, ER Model, ER to Relational Mapping, PL/SQL Stored Procedures & Triggers, Functional Dependencies and Normalization, Storage & Indexing, Indexing Structure, XML documents & Web Services, Query Processing & Evaluation, Query Optimization, Transaction processing, Object-Oriented Databases, Distributed Databases, Database Security & Access Control

IV. Operating Systems & Web

Roles of an Operating System, Operating-System Evolution, Memory Management, File Systems (UNIX and Windows Systems), Web applications Issues (Accessibility, testing, performance, operation, maintenance, security).

SUGGESTED READINGS

S. No.	Title	Author
1.	Computer System Architecture	M. Morris Mano
2.	Software Engineering	Ian Sommerville
3.	Computer Networking: A Top Down approach featuring the Internet	James F. Kurose and Keith W. Ross
4.	Data and Computer Communications	William Stallings
5.	Database Systems Concepts	Silberchatz, Abraham & Korth, Sudarshan
6.	Computer Networks	Andrew Tanenbaum
7.	Web Services: Principles and Technology	Michael Papazoglu

Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 included in Consolidated Advertisement No. 03/2022

PAPER-I: ENGLISH

Max Marks: 100

Time Allowed: 3 Hours

- (i) **English Essay-50 Marks:** Candidates will be required to write an Essay in English comprising **1500 words** from a set of **six given topics**. Candidates are expected to reflect comprehensive and research based knowledge on a selected topic. Candidate's articulation, expression and technical approach to the style of English Essay writing will be examined.
- (ii) **English (Composition and Précis)-50 Marks:**
The examination will test the candidate's abilities to handle Précis Writing, Reading Comprehension, Sentence Structuring, Translation, Grammar and Vocabulary, etc.
- Précis Writing (10 marks):** A selected passage with an orientation of generic understanding and enough flexibility for compression shall be given for précising and suggesting an appropriate title.
- Reading Comprehension (10 marks):** A selected passage that is rich in substance but not very technical or discipline-specific shall be given, followed by five questions, each carrying 2 marks.
- Grammar and Vocabulary (10 marks):** Correct usage of Tense, Articles, Prepositions, Conjunctions, Punctuation, Phrasal Verbs, Synonyms and Antonyms etc.
- Sentence Correction (5 marks):** Ten sentences shall be given each having a clear structural flaw in terms of grammar or punctuation. The candidates shall be asked to rewrite them with really needed correction only, without marking unnecessary alterations. No two or more sentences should have exactly the same problem, and 2-3 sentences shall be based on correction of punctuation marks.
- Grouping of Words (5 marks):** A random list of ten words of moderate standard (neither very easy nor utterly unfamiliar) shall be given, to be grouped by the candidates in pairs of those having similar or opposite meaning, as may be clearly directed in the question.
- Pairs of Words (5 marks):** Five pairs shall be given of seemingly similar words with different meanings, generally confused in communication, for bringing out the difference in meaning of any five of them by first explaining them in parenthesis and then using them in sentences.
- Translation (5 marks):** Ten short Urdu sentences involving structural composition, significant terms and figurative/idiomatic expressions shall be given, to be accurately translated in English.

SUGGESTED READINGS

Sr. No.	Title	Author
1.	English Grammar in Use	Raymond Murphy (Cambridge University Press)
2.	Practical English Usage	M. Swan (Oxford University Press)
3.	The Little, Brown Handbook	H. Ramsey Flower & Jane Aaron (The Little, Brown & Co; Harper Collins)
4.	A University English Grammar	R. Quirk & S. Greenbaum (ELBS; Longmans)
5.	Write Better, Speak Better	Readers Digest Association
6.	Modern English in Action	Henry Christ (D.C. Heath & Co.)
7.	Exploring the World of English	Syed Saadat Ali Shah

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-44 (A)/2022-R
Particulars of post	Associate Professor (Female) (Business Administration) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Business Administration) (Subjective)**50 Marks****I. Introduction to Management**

- Introduction to Management
- The History and evaluation of Management
- Organizational theories and different approaches to management
- Foundations and basic elements of Planning
- Effective strategic planning
- Decision Making
- Decision making process
- Strategic management process

II. Financial Accounting

- Accounting for companies
- Accounting for Issuance of shares
- Company final Accounts
- Accounting for Dividends
- Accounting for Bonds and Debentures
- Preparation and Interpretation of Cash Flow
- Important IAS and FRS
- Analysis of Financial Statements
- Accounting for consolidated statements.

III. Introduction to HRM

- Meeting present human resource requirements
- Emerging Human resource management challenges.
- Trends in HRM
- Global vs local HRM practices
- HRM from Islamic and indigenous perspective
- Basic Islamic philosophy of managing human resource
- HR Planning

IV. Marketing Management

- Marketing: An Overview
- Marketing Information Systems.
- Consumer Markets and Consumer Behavior Analysis

- STP Marketing
- Product Markets Strategies
- Pricing Strategies and Policies
- Marketing Channel Decisions

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
- Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- II. Process of Teaching and Teaching Strategies**
- Process of Classroom Communication
 - Factors affecting Classroom Communication
 - Barriers to Classroom Communications
 - Use of Instructional Materials and Media
- III. Educational Assessment and Evaluation**
- Concept of Classroom Assessment and Evaluation
 - Distinction between Assessment, Evaluation and Measurement
 - Approaches to Evaluation: Formative Evaluation; Summative Evaluation
 - Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

S.No.	Title	Author
1.	Management	Mary Coulter & Robbins
2.	Managing Human Resources.	Luis R. Gomez Mejia, David B. Balkin, Robert L. Cardy
3.	Financial & Managerial Accounting,	Williams, Haka, Bettner:
4.	Financial Accounting	Professor Muhammad Ammanullah Khan
5.	Marketing Management, Analysis, Planning, Control	Philip Kotler,
6.	Fundamentals of Marketing	William J. Stanton & Charles Futrell
7.	Research in Education	JW Best
8.	Integrating Education Technology into Teaching	Roblyer
9.	Curriculum Development	S.M. Shahid
10.	Educational Measurement and Evaluation	S.M. Shahid
11.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-44 (B)/2022-R
Particulars of post	Associate Professor (Female) (Computer Science) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Computer Science) (Subjective)**50 Marks****I. Computer Architecture**

Microprocessor Bus Structure (Address/Data/Control), Registers and Flags, Storage Hierarchy (Main/Virtual/Cache/Secondary memory), Peripheral communication, CPU, ALU, Principles of Instruction Set Design, Multiprocessors & Thread Level Parallelism.

II. Object Oriented Programming

Data types, control structures, functions, arrays, classes, methods, object and encapsulation; constructors and destructors, operator and function overloading, virtual functions, derived classes, inheritance and polymorphism, I/O and file processing.

III. Data Structure and Algorithms

Stack and Queue, Sequential Search, Binary Search, Bubble sort, Merge sort, Quick sort, Insertion sort, Selection Sort, Linked Lists, Infix to postfix conversions, Expression tree construction, Tree traversals, Graph representation and traversal, Minimum spanning tree.

IV. Database Management Systems

Entity Relationship modeling, Relational data model and algebra, Structured Query language, Database design, functional dependencies and normal forms, concurrency control and recovery techniques, Database security and authorization.

V. Computer Communications and Networks

Asynchronous and Synchronous transmission, LAN/WAN/MAN, Network layers, Transport layer protocols TCP/IP, UDP, Error Control, Flow Control, Multiplexing, Routing, Bridging, Network security issues.

VI. Operating Systems

Process and CPU management, Multithreading, Deadlocks, Memory management and virtual memory, External Fragmentation, Paging and Demand Paging, File management systems, Scheduling and dispatch, Introduction to concurrency.

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
 - Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- II. Process of Teaching and Teaching Strategies**
 - Process of Classroom Communication
 - Factors affecting Classroom Communication
 - Barriers to Classroom Communications
 - Use of Instructional Materials and Media
- III. Educational Assessment and Evaluation**
 - Concept of Classroom Assessment and Evaluation
 - Distinction between Assessment, Evaluation and Measurement
 - Approaches to Evaluation: Formative Evaluation; Summative Evaluation
 - Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
 - Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

Suggested Reading

S.No.	Title	Author
1.	Modern Operating Systems	Andrew S. Tanenbaum
2.	Operating System Concepts	Addison-Wesley
3.	Algorithms and Data Structures	N. Wirth
4.	Data structures	Aaron M. Tanenbaum,
5.	Database Systems: A Practical Approach to Design, Implementation and Management	R.Connolly and P.Begg
6.	Introduction to Computer Networks	A. S. Tanenbaum
7.	Computer Networks and Internets	Douglas E. Comer
8.	Computer Architecture: A Quantitative Approach	Hennessy & Patterson
9.	Research in Education	JW Best
10.	Integrating Education Technology into Teaching	Roblyer
11.	Curriculum Development	S.M. Shahid
12.	Educational Measurement and Evaluation	S.M. Shahid
13.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-44 (C)/2022-R
Particulars of post	Associate Professor (Female) (Economics) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Economics) (Subjective)**50 Marks****I. Micro Economics**

Consumer behaviour, Determination of market demand and supply i.e. concept of elasticity of Demand & Supply, Static, Comparative Static Analysis, Distinction between partial and general equilibrium analysis (basic level) theory of the Firm, Producer's equilibrium, Pricing factors of production

II. Macro Economics

Basic Economic Concepts, National Income Accounting, Consumption Function, Multiplier, Accelerator, Component of Aggregate Demand, Labour Demand and Supply, Un-Employment, Determination of equilibrium level of income and output (at least with reference to two or three school of thought), Inflation.

III. Public Financing

Government expenditure, Sources of Government Revenue, Privatization, Taxes and non-taxes, Incidence of different taxes, Public Debt, Objectives, methods of repayment, Deficit financing, General Equilibrium Analysis, Welfare Economics, Fiscal Policy.

IV. Role of Foreign Trade and Aid in Economic Development

Trends in Pakistan's Balance of Payments, Terms of Trade, Changes in direction of trade, Trends in Pakistan's major exports and imports, Causes of significant changes in the trends, the role of migration and remittances in Pakistan's economy, costs and benefits of Foreign Aid, Role of Foreign Investment.

V. Major Issues in Pakistan Economy

Energy crisis, Corruption, Bad governance, External debt accumulation and dependency, Unemployment, Income inequality, Inflation, Fiscal and trade deficits, Balance of payment issues, Shortage of irrigation water.

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
 - Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- II. Process of Teaching and Teaching Strategies**
 - Process of Classroom Communication
 - Factors affecting Classroom Communication
 - Barriers to Classroom Communications
 - Use of Instructional Materials and Media
- III. Educational Assessment and Evaluation**
 - Concept of Classroom Assessment and Evaluation
 - Distinction between Assessment, Evaluation and Measurement
 - Approaches to Evaluation: Formative Evaluation; Summative Evaluation
 - Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
 - Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

S. No.	Title	Author
1.	A Text-book of Economics Theory	Stonier & Hague
2.	Government Finance—An Economic Analysis	Due John, F.
3.	Microeconomic	Ferguson, C.E. & Gould, J.P., Nicholson, Mankiw
4.	Macroeconomics	Rudigar Dorubush and Stanley Fisher Blanchard
5.	Foreign Aid Theory and Practice in Southern Asia	Wolf, Jr. DC
6.	History of International Trade	Findlay, R and O' Rourke, K
7.	Research in Education	JW Best
8.	Integrating Education Technology into Teaching	Roblyer
9.	Curriculum Development	S. M. Shahid
10.	Educational Measurement and Evaluation	S. M. Shahid
11.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-44 (D)/2022-R
Particulars of post	Associate Professor (Female) (English) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (English) (Subjective)**50 Marks****I. Essays:**

- Bertrand Russell (The Conquest of Happiness)
- George Orwell (Politics and the English Language; The Prevention of Literature)
- Ralph Waldo Emerson (The Transcendentalist; Self-reliance)

II. Short Stories:

- Somerset Maugham (The Lotus-eater)
- G.K.Chesterton (A Somewhat Improbable Story)
- O'Henry (The Gift of the Magi)

III. Poetry:

- William Wordsworth (Resolution Independence; Tintern Abbey)
- John Keats (Ode to a Nightingale; Ode to Autumn)
- Lord Alfred Tennyson (Ulysses; The Lady of Shalott)
- Yeats (A Dialogue of Self and Soul; The Second Coming)
- Eliot (The Wasteland; Love Song of J. Alfred Prufrock)
- Philip Larkin (Maturity; Continuing to Live; The Trees)
- Wallace Stevens (A postcard from the volcano; Continual conversation with a silent man; Dry loaf) **OR** Walt Whitman (As I ponder'd in silence; Are you the new person drawn toward me?; This moment yearning and thoughtful)

IV. Drama:

- Shakespeare (*Hamlet; King Lear, As you like it and Twelfth Night*)
- William Congreve (*The Way of the World*)
- Shaw (*Pygmalion; Heartbreak House*)
- Harold Pinter (*The Caretaker*)
- Samuel Beckett (*Waiting for Godot*)
- Eugene O'Neill (*Long Day's Journey into Night*)

V. Novels:

- Thomas Hardy (*Far from the Madding Crowd*)
- D.H. Lawrence (*Sons and Lovers*)
- George Orwell (*Nineteen Eighty-four*)
- James Joyce (*A Portrait of the Artist as a Young Man*)
- Iris Murdoch (*Under the Net*)
- Nathaniel Hawthorne (*The Scarlet Letter*) or William Faulkner (*The Sound and the Fury*)

VI. Literacy Theory & Criticism

- Structuralism
- Marxism
- Deconstructionism
- Psychoanalytic criticism
- Feminist criticism
- Postcolonial Criticism

Part-III (Professional) (Subjective) : 25 Marks**I. Development of Curriculum and Instructional Material**

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire; Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

SUGGESTED READINGS

S.No.	Title	Author
1.	The basics Literary Theory. (Second edition). Routledge.	Bertens, H. (2008).
2.	Literary Theory: An Introduction. (Anniversary Edition).	Eagleton, E. (2008).
3.	A New Handbook of Literary Terms.	Mikics, W. (2007).
4.	A Companion to Twentieth Century Poetry.	Roberts, N. (2003).
5.	A Reader's Guide to Contemporary Literary Theory. (Fifth edition).	Selden, R., Widdowson, P., & Brooker, P. (2005)
6.	Twentieth Century British Drama.	Smart, J. (2001).
7.	Modern Critical Views & Interpretations, ed: 80's and 90's editions.	Harold Bloom (these include all range of authors and their works given above)
8.	A Companion to 20 th Century Drama Oxford: Blackwell.	Krasner David. 2005.
9.	Research in Education	JW Best
10.	Integrating Education Technology into Teaching	Roblyer
11.	Curriculum Development	S. M. Shahid
12.	Educational Measurement and Evaluation	S. M. Shahid
13.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-44 (E)/2022-R
Particulars of post	Associate Professor (Female) (Mathematics) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Mathematics) (Subjective)**50 Marks****I. Vector Calculus**

Vector algebra; scalar and vector products of vectors; gradient divergence and curl of a vector; line, surface and volume integrals; Green's, Stokes' and Gauss theorems.

II. Statics

Composition and resolution of forces; parallel forces and couples; equilibrium of a system of coplanar forces; centre of mass of a system of particles and rigid bodies; equilibrium of forces in three dimensions.

III. Dynamics

- Motion in a straight line with constant and variable acceleration; simple harmonic motion; conservative forces and principles of energy.
- Tangential, normal, radial and transverse components of velocity and acceleration; motion under central forces; planetary orbits; Kepler laws;

IV. Ordinary differential equations

- Equations of first order; separable equations, exact equations; first order linear equations; orthogonal trajectories; nonlinear equations reducible to linear equations, Bernoulli and Riccati equations.
- Equations with constant coefficients; homogeneous and inhomogeneous equations; Cauchy-Euler equations; variation of parameters.
- Ordinary and singular points of a differential equation; solution in series; Bessel and Legendre equations; properties of the Bessel functions and Legendre polynomials.

V. Modern Algebra

- Group, subgroups, Lagranges theorem, Cyclic groups, Normal subgroups, Quotient groups. Fundamental theorem of homomorphism. Isomorphism theorems of groups, Inner automorphisms. Conjugate elements, conjugate subgroups. Commutator subgroups.
- Ring, Subrings, Integral domains, Quotient fields, Isomorphism theorems, Field extension and finite fields.
- Vector spaces, Linear independence, Bases, Dimension of a finitely generated space. Linear transformations, Matrices and their algebra. Reduction of matrices to their echelon form. Rank and nullity of a linear transformation.
- Solution of a system of homogeneous and non-homogeneous linear equations. Properties of determinants.

Part-III (Professional) (Subjective) : 25 Marks

I. Development of Curriculum and Instructional Material

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

SUGGESTED READINGS

S. No.	Title	Author
1.	An Introduction to Vector Analysis	Khalid Latif,
2.	Introduction to Mechanics	Q.K. Ghori
3.	An Intermediate Course in Theoretical Mechanics	Khalid Latif,
4.	Differential Equations with Boundary Value Problems	D. G. Zill and M. R. Cullen
5.	Elementary Differential Equations	E.D. Rainville, P.E. Bedient and R.E. Bedient
6.	Mathematical Methods	S. M. Yousaf, Abdul Majeed and Muhammad Amin
7.	Topics in Algebra	Herstein, I.N.
8.	Research in Education	JW Best
9.	Integrating Education Technology into Teaching	Roblyer
10.	Curriculum Development	S.M. Shahid
11.	Educational Measurement and Evaluation	S.M. Shahid
12.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-44 (F)/2022-R
Particulars of post	Associate Professor (Female) (Urdu) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with 8 years post qualification teaching and administrative experience at College / University level. OR M. Phil Degree in the relevant subject with 10 years post qualification teaching and administrative experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with 12 years post qualification teaching and administrative experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Urdu) (Subjective)**50 Marks**

- ۱۔ اردو ادب کا مطالعہ
- i۔ اُردو زبان و ادب کی اسلامی شناخت
- ii۔ بیسویں صدی کی ادبی تحریکیں
- iii۔ پاکستانی ادب کی اصطلاح: تشکیل و روایت اور ارتقاء
- ۲۔ شعری ادب کا تنقیدی مطالعہ
- الف۔ دورِ قدیم
- i۔ میر (غزل - انتخاب میر مولوی عبدالحق)
- ii۔ غالب (دیوان غالب)
- iii۔ حالی (مسدس)
- iv۔ اقبال (طلوع اسلام، مختصر راہ و مسجد قرطبہ)
- ب۔ دورِ جدید
- i۔ فیض (غزل - دستِ بیا)
- ii۔ راشد (نظم - ایران میں رہنمائی)
- iii۔ مجید امجد (نظم - شبِ رفتہ)
- iv۔ ناصر کاظمی (غزل - برگِ نئے)
- ۳۔ تنقیدی ادب کا تنقیدی مطالعہ
- الف۔ غیر افسانوی نثر
- i۔ شبلی (سیرت النبی ﷺ، جلد اول)
- ii۔ مولوی عبدالحق (خاکے، چند ہم عصر)
- ب۔ افسانوی نثر
- i۔ منٹو (افسانے، منٹو کے بیس افسانے، مرتب ڈاکٹر انوار احمد، ڈاکٹر اے بی اشرف)
- ii۔ احمد ندیم قاسمی (افسانے، کپاس کے پھول)
- iii۔ مشتاق احمد یوسفی (ظفر و مزاج، آبِ گم)

۴۔ تفصیلاً۵۔ مضمون

Part-III (Professional) (Subjective) : 25 Marks

- V. Development of Curriculum and Instructional Material**
- Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- VI. Process of Teaching and Teaching Strategies**
- Process of Classroom Communication
 - Factors affecting Classroom Communication
 - Barriers to Classroom Communications
 - Use of Instructional Materials and Media
- VII. Educational Assessment and Evaluation**
- Concept of Classroom Assessment and Evaluation
 - Distinction between Assessment, Evaluation and Measurement
 - Approaches to Evaluation: Formative Evaluation; Summative Evaluation
 - Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- VIII. Research Methods in Education**
- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

ڈاکٹر وزیر آغا	۱۔ تحقیق اور جدید اردو تحقیق
ڈاکٹر انور سدید	۲۔ اردو ادب کی تحریکیں
شیخ محمد اکرام	۳۔ آء کوڑ
شیخ محمد اکرام	۴۔ روڈ کوڑ
شیخ محمد اکرام	۵۔ موج کوڑ
ڈاکٹر روبینہ شہناز	۶۔ اردو تحقیق میں پاکستانی تصورات
مرتبین: ڈاکٹر رفیع الدین ہاشمی، ڈاکٹر سہیل عمر، ڈاکٹر وحید عشرت.	۷۔ قابلیت کے سو سال
ترتیب نو: ڈاکٹر خواجہ محمد زکریا	۸۔ تاریخ ادبیات مسلمانان پاکستان و ہند
مرتب: ڈاکٹر نواز علی	۹۔ اردو ادب کے پچاس سال

S.No.	Title	Author
10.	Research in Education	JW Best
11.	Integrating Education Technology into Teaching	Roblyer
12.	Curriculum Development	S. M. Shahid
13.	Educational Measurement and Evaluation	S. M. Shahid
14.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-45(A)/2022-R
Particulars of post	Associate Professor (Male) (Computer Science) (BS-19) , Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Computer Science) (Subjective)**50 Marks****I. Computer Architecture**

Microprocessor Bus Structure (Address/Data/Control), Registers and Flags, Storage Hierarchy (Main/Virtual/Cache/Secondary memory), Peripheral communication, CPU, ALU, Principles of Instruction Set Design, Multiprocessors & Thread Level Parallelism.

II. Object Oriented Programming

Data types, control structures, functions, arrays, classes, methods, object and encapsulation; constructors and destructors, operator and function overloading, virtual functions, derived classes, inheritance and polymorphism, I/O and file processing.

III. Data Structure and Algorithms

Stack and Queue, Sequential Search, Binary Search, Bubble sort, Merge sort, Quick sort, Insertion sort, Selection Sort, Linked Lists, Infix to postfix conversions, Expression tree construction, Tree traversals, Graph representation and traversal, Minimum spanning tree.

IV. Database Management Systems

Entity Relationship modeling, Relational data model and algebra, Structured Query language, Database design, functional dependencies and normal forms, concurrency control and recovery techniques, Database security and authorization.

V. Computer Communications and Networks

Asynchronous and Synchronous transmission, LAN/WAN/MAN, Network layers, Transport layer protocols TCP/IP, UDP, Error Control, Flow Control, Multiplexing, Routing, Bridging, Network security issues.

VI. Operating Systems

Process and CPU management, Multithreading, Deadlocks, Memory management and virtual memory, External Fragmentation, Paging and Demand Paging, File management systems, Scheduling and dispatch, Introduction to concurrency.

Part-III (Professional) (Subjective) : 25 Marks**I. Development of Curriculum and Instructional Material**

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire; Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

Suggested Reading

S.No.	Title	Author
1.	Modern Operating Systems	Andrew S. Tanenbaum
2.	Operating System Concepts	Addison-Wesley
3.	Algorithms and Data Structures	N. Wirth
4.	Data structures	Aaron M. Tanenbaum,
5.	Database Systems: A Practical Approach to Design, Implementation and Management	R.Connolly and P.Begg
6.	Introduction to Computer Networks	A. S. Tanenbaum
7.	Computer Networks and Internets	Douglas E. Comer
8.	Computer Architecture: A Quantitative Approach	Hennessy & Patterson
9.	Research in Education	JW Best
10.	Integrating Education Technology into Teaching	Roblyer
11.	Curriculum Development	S.M. Shahid
12.	Educational Measurement and Evaluation	S.M. Shahid
13.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-45(B)/2022-R
Particulars of post	Associate Professor (Male) (Economics) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Economics) (Subjective)**50 Marks****I. Micro Economics**

Consumer behaviour, Determination of market demand and supply i.e. concept of elasticity of Demand & Supply, Static, Comparative Static Analysis, Distinction between partial and general equilibrium analysis (basic level) theory of the Firm, Producer's equilibrium, Pricing factors of production

II. Macro Economics

Basic Economic Concepts, National Income Accounting, Consumption Function, Multiplier, Accelerator, Component of Aggregate Demand, Labour Demand and Supply, Un-Employment, Determination of equilibrium level of income and output (at least with reference to two or three school of thought), Inflation.

III. Public Financing

Government expenditure, Sources of Government Revenue, Privatization, Taxes and non-taxes, Incidence of different taxes, Public Debt, Objectives, methods of repayment, Deficit financing, General Equilibrium Analysis, Welfare Economics, Fiscal Policy.

IV. Role of Foreign Trade and Aid in Economic Development

Trends in Pakistan's Balance of Payments, Terms of Trade, Changes in direction of trade, Trends in Pakistan's major exports and imports, Causes of significant changes in the trends, the role of migration and remittances in Pakistan's economy, costs and benefits of Foreign Aid, Role of Foreign Investment.

V. Major Issues in Pakistan Economy

Energy crisis, Corruption, Bad governance, External debt accumulation and dependency, Unemployment, Income inequality, Inflation, Fiscal and trade deficits, Balance of payment issues, Shortage of irrigation water.

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
- Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- II. Process of Teaching and Teaching Strategies**
- Process of Classroom Communication
 - Factors affecting Classroom Communication
 - Barriers to Classroom Communications
 - Use of Instructional Materials and Media
- III. Educational Assessment and Evaluation**
- Concept of Classroom Assessment and Evaluation
 - Distinction between Assessment, Evaluation and Measurement
 - Approaches to Evaluation: Formative Evaluation; Summative Evaluation
 - Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

S. No.	Title	Author
1.	A Text-book of Economics Theory	Stonier & Hague
2.	Government Finance—An Economic Analysis	Due John, F.
3.	Microeconomic	Ferguson, C.E. & Gould, J.P., Nicholson, Mankiw
4.	Macroeconomics	Rudigar Dorubush and Stanley Fisher Blanchard
5.	Foreign Aid Theory and Practice in Southern Asia	Wolf, Jr. DC
6.	History of International Trade	Findlay, R and O' Rourke, K
7.	Research in Education	JW Best
8.	Integrating Education Technology into Teaching	Roblyer
9.	Curriculum Development	S. M. Shahid
10.	Educational Measurement and Evaluation	S. M. Shahid
11.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-45(C)/2022-R
Particulars of post	Associate Professor (Male) (English) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (English) (Subjective)**50 Marks****I. Essays:**

- Bertrand Russell (The Conquest of Happiness)
- George Orwell (Politics and the English Language; The Prevention of Literature)
- Ralph Waldo Emerson (The Transcendentalist; Self-reliance)

II. Short Stories:

- Somerset Maugham (The Lotus-eater)
- G.K.Chesterton (A Somewhat Improbable Story)
- O'Henry (The Gift of the Magi)

III. Poetry:

- William Wordsworth (Resolution Independence; Tintern Abbey)
- John Keats (Ode to a Nightingale; Ode to Autumn)
- Lord Alfred Tennyson (Ulysses; The Lady of Shalott)
- Yeats (A Dialogue of Self and Soul; The Second Coming)
- Eliot (The Wasteland; Love Song of J. Alfred Prufrock)
- Philip Larkin (Maturity; Continuing to Live; The Trees)
- Wallace Stevens (A postcard from the volcano; Continual conversation with a silent man; Dry loaf) **OR** Walt Whitman (As I ponder'd in silence; Are you the new person drawn toward me?; This moment yearning and thoughtful)

IV. Drama:

- Shakespeare (*Hamlet; King Lear, As you like it and Twelfth Night*)
- William Congreve (*The Way of the World*)
- Shaw (*Pygmalion; Heartbreak House*)
- Harold Pinter (*The Caretaker*)

- Samuel Beckett (*Waiting for Godot*)
- Eugene O'Neill (*Long Day's Journey into Night*)

V. Novels:

- Thomas Hardy (*Far from the Madding Crowd*)
- D.H. Lawrence (*Sons and Lovers*)
- George Orwell (*Nineteen Eighty-four*)
- James Joyce (*A Portrait of the Artist as a Young Man*)
- Iris Murdoch (*Under the Net*)
- Nathaniel Hawthorne (*The Scarlet Letter*) or William Faulkner (*The Sound and the Fury*)

VI. Literacy Theory & Criticism

- Structuralism
- Marxism
- Deconstructionism
- Psychoanalytic criticism
- Feminist criticism
- Postcolonial Criticism

Part-III (Professional) (Subjective) : 25 Marks

I. Development of Curriculum and Instructional Material

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire; Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

SUGGESTED READINGS

S.No.	Title	Author
1.	The basics Literary Theory. (Second edition). Routledge.	Bertens, H. (2008).
2.	Literary Theory: An Introduction. (Anniversary Edition).	Eagleton, E. (2008).
3.	A New Handbook of Literary Terms.	Mikics, W. (2007).
4.	A Companion to Twentieth Century Poetry.	Roberts, N. (2003).
5.	A Reader's Guide to Contemporary Literary Theory. (Fifth edition).	Selden, R., Widdowson, P., & Brooker, P. (2005)
6.	Twentieth Century British Drama.	Smart, J. (2001).
7.	Modern Critical Views & Interpretations, ed: 80's and 90's editions.	Harold Bloom (these include all range of authors and their works given above)
8.	A Companion to 20 th Century Drama Oxford: Blackwell.	Krasner David. 2005.
9.	Research in Education	JW Best
10.	Integrating Education Technology into Teaching	Roblyer
11.	Curriculum Development	S. M. Shahid
12.	Educational Measurement and Evaluation	S. M. Shahid
13.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-45(D)/2022-R
Particulars of post	Associate Professor (Male) (Mathematics) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Mathematics) (Subjective)**50 Marks****I. Vector Calculus**

Vector algebra; scalar and vector products of vectors; gradient divergence and curl of a vector; line, surface and volume integrals; Green's, Stokes' and Gauss theorems.

II. Statics

Composition and resolution of forces; parallel forces and couples; equilibrium of a system of coplanar forces; centre of mass of a system of particles and rigid bodies; equilibrium of forces in three dimensions.

III. Dynamics

- Motion in a straight line with constant and variable acceleration; simple harmonic motion; conservative forces and principles of energy.
- Tangential, normal, radial and transverse components of velocity and acceleration; motion under central forces; planetary orbits; Kepler laws;

IV. Ordinary differential equations

- Equations of first order; separable equations, exact equations; first order linear equations; orthogonal trajectories; nonlinear equations reducible to linear equations, Bernoulli and Riccati equations.
- Equations with constant coefficients; homogeneous and inhomogeneous equations; Cauchy-Euler equations; variation of parameters.

- Ordinary and singular points of a differential equation; solution in series; Bessel and Legendre equations; properties of the Bessel functions and Legendre polynomials.

V. Modern Algebra

- Group, subgroups, Lagranges theorem, Cyclic groups, Normal subgroups, Quotient groups. Fundamental theorem of homomorphism. Isomorphism theorems of groups, Inner automorphisms. Conjugate elements, conjugate subgroups. Commutator subgroups.
- Ring, Subrings, Integral domains, Quotient fields, Isomorphism theorems, Field extension and finite fields.
- Vector spaces, Linear independence, Bases, Dimension of a finitely generated space. Linear transformations, Matrices and their algebra. Reduction of matrices to their echelon form. Rank and nullity of a linear transformation.
- Solution of a system of homogeneous and non-homogeneous linear equations. Properties of determinants.

Part-III (Professional) (Subjective) : 25 Marks

I. Development of Curriculum and Instructional Material

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire; Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

SUGGESTED READINGS

S. No.	Title	Author
1.	An Introduction to Vector Analysis	Khalid Latif,
2.	Introduction to Mechanics	Q.K. Ghori
3.	An Intermediate Course in Theoretical Mechanics	Khalid Latif,
4.	Differential Equations with Boundary Value Problems	D. G. Zill and M. R. Cullen
5.	Elementary Differential Equations	E.D. Rainville, P.E. Bedient and R.E. Bedient
6.	Mathematical Methods	S. M. Yousaf, Abdul Majeed and Muhammad Amin
7.	Topics in Algebra	Herstein, I.N.
8.	Research in Education	JW Best
9.	Integrating Education Technology into Teaching	Roblyer
10.	Curriculum Development	S.M. Shahid
11.	Educational Measurement and Evaluation	S.M. Shahid
12.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-45(E)/2022-R
Particulars of post	Associate Professor (Male) (Physics) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Physics) (Subjective)**50 Marks****I. Mechanics**

- Vectors—Dots, Cross and triple products, Gradient, divergence and applications.
- Newtonian laws of motion; calculus based approach to kinematics, forces and dynamics, conservation law of energy; conservation of linear and angular momentum; Gravitation; planetary motion and satellites; Kepler's laws; centripetal forces
- Special theory of relativity. Michelson—Morley experiment and Einstein's postulates; Lorentz transformation; time dilation and length contraction; equivalence of mass and energy.

II. Waves and Oscillation

- Free oscillation with one and two degrees of freedom; forced and damped oscillations and phenomenon of resonance.
- Reflection, Refraction, Interference, Diffraction and Polarization of waves; interferometer and Newton's rings.

III. Heat and Thermodynamics

- Perfect gas and Van der Waals equation; Three Laws of Thermodynamics, internal energy, temperature, entropy. Thermal properties of Simple system production and measurement of low temperatures; Maxwellian distribution of molecular velocities; Brownian motion; Transport phenomena. Classical Maxwell-Boltzmann Statistics and its application.

IV. Electricity and Magnetism

- Gauss' law Electric potential and Poisson and Laplace's equation Dielectric

medium and Polarization; Ampere's law; Vector potential; Magnetic properties of matter; Faraday's law of electromagnetic induction; Maxwell's equations; Poynting theorem and Poynting Vector. Maxwell's equations in integral and differential form.

V. Modern and Quantum Physics

- Operators and quantum states, time dependent and independent Schrodinger equation, angular momentum, wave mechanics, Heisenber's uncertainty relationship and indeterminacy based on commutation properties of operators, Bohr theory and quantum numbers including electron spin; Pauli's exclusion principle; Spectra of simple systems with one or two valence electrons. Lande's g factor and Zeeman effect. Raman effect; Waves and particles and De Broglie's Hypothesis.

VI. Solid State Physics

- Crystal lattice and structure, Bravais lattice, free electron model, Band theory and electron in a periodic potential, Fermi energy and density of states, n and p type semiconductors, physics of the transistor and MOSFET, dielectric properties, magnetic properties and origin of magnetism.

VII. Nuclear Physics

- Structure of Nuclei; Radioactivity, α , β and γ decay. Methods of detection, Phenomenon of fission; reactor and nuclear power, nuclear fusion and its application.

Part-III (Professional) (Subjective) : 25 Marks

I. Development of Curriculum and Instructional Material

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing.

SUGGESTED READINGS

S. No.	Title	Author
1.	Perspectives of Modern Physics.	A. Beiser.
2.	Fundamentals of Physics.	Halliday & Resnick
3.	Introduction to Electromagnetic Fields and Waves.	D. Corson & P. Lorrain.
4.	Heat and Thermodynamics.	D. Zemansky
5.	Introduction to Quantum Mechanics	D. Griffiths
6.	Modern Physics	Serway, Moses, Moyer.
7.	Solid State Physics	C. Kittel
8.	Research in Education	JW Best
9.	Integrating Education Technology into Teaching	Roblyer
10.	Curriculum Development	S. M. Shahid
11.	Educational Measurement and Evaluation	S. M. Shahid
12.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-45(F)/2022-R
Particulars of post	Associate Professor (Male) (Psychology) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	<p>Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level</p> <p style="text-align: center;">OR</p> <p>M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level</p> <p style="text-align: center;">OR</p> <p>Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.</p>

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Psychology) (Subjective)**50 Marks**

- I. **Nature and Scope of Psychology:** Definition and scope, Psychology as a Science, Schools, Perspectives, and Models of Psychology, Recent Trends
- II. **Biological Basis of Behaviour:** Nervous System, Neuron and its function, Central and Peripheral Nervous System, Endocrine System
- III. **Motivation and Emotion:** Homeostasis, Factors affecting Motivation, Biogenic and Social Motives, Measurement of Human Motivation, Theories of Motivation, Emotions, Types of Emotions, Physiological changes and Emotion, Theories of Emotion.
- IV. **Personality:** Determinants of Personality, Factors in Development of Personality, Theoretical Perspectives, Traits and Types, Personality Assessment and Techniques, Cross-Cultural Issues.
- V. **Intelligence:** Theories of Intelligence, Types of intelligence (IQ, EQ), Assessing Intelligence
- VI. **Developmental Psychology:** Physical, Cognitive, Social and Emotional development in Childhood, Adolescence, Adulthood and Old Age
- VII. **Abnormal and Clinical Psychology:** Concept and causes of Abnormality, Clinical Assessment and Intervention, Different disorders such as Schizophrenia, Mood disorders, Anxiety disorders, Personality disorders, etc. Psychological treatment including different Therapeutic techniques.

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
 - Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
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 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
 - Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

S.No.	Title	Author
1.	Introduction to Psychology	Atkinson R. C., & Smith, E. E
2.	Development Across the Life Span	Feldman, R.
3.	Abnormal Psychology	Kring, A. M
4.	Psychology	Myers, D. G.
5.	An introduction of theories of personality	Ewen, R. B.
6.	Research in Education	JW Best
7.	Integrating Education Technology into Teaching	Roblyer
8.	Curriculum Development	S.M. Shahid
9.	Educational Measurement and Evaluation	S.M. Shahid
10.	Educational Administration	S.M. Shahid

PAPER-II: PROFESSIONAL

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-45(G)/2022-R
Particulars of post	Associate Professor (Male) (Urdu) (BS-19), Federal Government Educational Institutions (FGEI) (Cantts/ Garrisons), Colleges, Ministry of Defence
Minimum Qualification & Experience:	Ph. D. degree in the relevant subject with eight (8) years post qualification teaching and administrative experience at College/ university level OR M. Phil degree in the relevant subject with ten (10) years post qualification teaching and administrative experience at College/ University level OR Second Class or Grade 'C' Master's degree in the relevant subject with twelve (12) years post qualification teaching and administrative experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Urdu) (Subjective)**50 Marks**

- ۱۔ **اردو ادب کا مطالعہ**
- i۔ اردو زبان و ادب کی اسلامی شناخت
ii۔ بیسویں صدی کی ادبی تحریکیں
iii۔ پاکستانی ادب کی اصطلاح تشکیل و ردائت اور ارتقاء
- ۲۔ **شعری ادب کا تنقیدی مطالعہ**
- الف۔ دور قدیم
i۔ میر (غزل - انتخاب میر مولوی عبدالحق)
ii۔ غالب (دیوان غالب)
iii۔ حالی (مسدس)
iv۔ اقبال (ظہور اسلام، مختصر راہ، مسجد قرطبہ)
- ب۔ دور جدید
i۔ فیض (غزل - دستِ دعا)
ii۔ راشد (نظم - ایران میں ایشی)
iii۔ مجید امجد (نظم - شبِ رفت)
iv۔ ناصر کاظمی (غزل - برگِ نئے)
- ۳۔ **تثیری ادب کا تنقیدی مطالعہ**
- الف۔ غیر افسانوی نثر
i۔ شبلی (سیرت النبی ﷺ، جلد اول)
ii۔ مولوی عبدالحق (خاکے، چند ہم عمر)
- ب۔ افسانوی نثر
i۔ منٹو (افسانے، منٹو کے بیس افسانے، مرتب ڈاکٹر انوار احمد، ڈاکٹر اے بی اشرف)
ii۔ احمد ندیم قاسمی (افسانے، کپاس کے پھول)
iii۔ مشتاق احمد یوسفی (ظہور مزاج، آبِ گم)

۴۔ **تجزیہ**۵۔ **مضمون**

Part-III (Professional) (Subjective) : 25 Marks

- I. Development of Curriculum and Instructional Material**
- Elements of Curriculum.
 - Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.
- II. Process of Teaching and Teaching Strategies**
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 - Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability
- IV. Research Methods in Education**
- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Research Proposal and Report Writing.

SUGGESTED READINGS

ڈاکٹر وزیر آغا	۱۔ تنقید اور جدید آرزو و تنقید
ڈاکٹر انور سدید	۲۔ آرزو ادب کی تحریکیں
شیخ محمد اکرام	۳۔ آج کو
شیخ محمد اکرام	۴۔ روڈ کو
شیخ محمد اکرام	۵۔ سوچ کو
ڈاکٹر روبینہ شہناز	۶۔ آرزو تنقید میں پاکستانی تصورات
مرتبین: ڈاکٹر رفیع الدین ہاشمی، ڈاکٹر سہیل عمر، ڈاکٹر وحید عشرت.	۷۔ تقابلیات کے سوسال
ترتیب نو: ڈاکٹر خواجہ محمد زکریا	۸۔ تاریخ ادبیات مسلمانان پاکستان وہند
مرتب: ڈاکٹر نواز ش علی	۹۔ آرزو ادب کے پچاس سال

S.No.	Title	Author
10.	Research in Education	JW Best
11.	Integrating Education Technology into Teaching	Roblyer
12.	Curriculum Development	S. M. Shahid
13.	Educational Measurement and Evaluation	S. M. Shahid
14.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-46/2022-R
Particulars of post	Deputy Chief (BS-19) , NTRC, Ministry of Communications.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i. Second Class or Grade 'C' Bachelor's degree in Transportation Engineering or Geo-Technical and Highway Engineering or equivalent qualification from a University recognized by the HEC with valid registration by PEC. OR Second Class or Grade 'C' Master's degree in Transport Management or equivalent qualification from a University recognized by the HEC. ii. Twelve (12) years post qualification experience in strategic policy making or management or planning or operations or research in a Government Department or International Organization or Academia relating to Transport Sector.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II (Professional) (Subjective) : 75 Marks**I. Introduction to Transportation Systems and Planning**

- Modes of transportation, need and scope of comprehensive plan
- Phases of planning
- Principles of planning
- Communication (road network, rail-road network & airport), port and harbor facilities
- Introduction to design aspects
- Overview of Mass Transit Systems

II. Introduction to Road Systems

- Location Survey in Rural and Urban Areas
- Urban Location Controls
- Highway Planning
- Roads in Hilly Areas

III. Highway Engineering

- Highway Components
- Elements of a typical cross-section of road
- Classification of Highways
- Highway Materials

IV. Geometric Design

- Design controls and criteria
- Sight distance requirements
- Horizontal curves
- Super elevation

V. Pavement Design

- Types of pavements
- Wheel loads
- Equivalent single axle load
- Repetition and impact factors
- Load distribution characteristics

- Design of flexible and rigid pavements
- Highway drainage
- Pavement failures

VI. Traffic Engineering

- Operating and design speeds
- Traffic flow parameters, their relationships and data collection methodologies
- Traffic Survey, O & D Survey
- At-grade and grade-separated intersections
- Traffic management, Level of service and signal timing for an intersection

SUGGESTED READINGS

S.No.	Title	Author
1.	Transportation Engineering Introduction to Planning, Design and Operations	Jason C. Yu,
2.	The Design and Performance of Road Pavements	Croney D.,
3.	Highway Traffic Analysis and Design	Salter R. J.
4.	Principles of Highway Engineering and Traffic Analysis	Fred L. Mannering, Scott S. Washburn, Walter P. Kilareski

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-52/2022-R
Particulars of post	Deputy Director (Reviewers) (BS-18), Laws of Pakistan Cell, Ministry of Law & Justice.
Minimum Qualification & Experience:	i. Second Class or Grade 'C' LLM or equivalent qualification from a University recognized by the HEC. ii. Five (5) years post qualification experience in the field of law.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II LAW: 75 Marks (Descriptive)**I. Definitions of Crime****II. All Provisions of:**

- i. Concept of arbitration, arbitration with or without intervention of court and in civil suits.
- ii. Establishment of Civil Courts with their Original & Appellate Jurisdiction.
- iii. The Code of Civil Procedure, 1908
- iv. Pakistan Penal Code, 1860
- v. Qanun-e-Shahdat Order, 1984
- vi. Criminal Procedure Code, 1898

SUGGESTED READINGS

S.No.	Title	Author
1.	Pakistan Penal Code, 1860	M. Mahmood
2.	Criminal Procedure Code, 1898	Shaukat Mahmood
3.	Law of Evidence	Justice (R) Khalid ur Rahman Khan
4.	Qanun-e-Shahdat Order, 1984	as adapted from Principles and Digest of the Law of Evidence by M. Monir
5.	The Code of Civil Procedure, 1908	Aamir Raza A. Khan
6.	The Arbitration Laws in Pakistan	M. Mahmood
7.	Civil Courts Ordinance, 1962	Nisar Ahmad Nisar

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-54/2022-R
Particulars of post	Deputy Solicitor (BS-19) , Ministry of Law and Justice.
Minimum Qualification & Experience:	i. Bachelor's Degree in Law or equivalent. ii. Ten (10) years post qualification experience of work in judicial or legal appointment or practice as an Advocate of High Court.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II LAW: 75 Marks (Descriptive)**I. Definitions of Crime****II. All Provisions of:**

- i. Concept of arbitration, arbitration with or without intervention of court and in civil suits.
- ii. Establishment of Civil Courts with their Original & Appellate Jurisdiction.
- iii. The Code of Civil Procedure, 1908
- iv. Pakistan Penal Code, 1860
- v. Qanun-e-Shahdat Order, 1984
- vi. Criminal Procedure Code, 1898

SUGGESTED READINGS

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1.	Pakistan Penal Code, 1860	M. Mahmood
2.	Criminal Procedure Code, 1898	Shaukat Mahmood
3.	Law of Evidence	Justice (R) Khalid ur Rahman Khan
4.	Qanun-e-Shahdat Order, 1984	as adapted from Principles and Digest of the Law of Evidence by M. Monir
5.	The Code of Civil Procedure, 1908	Aamir Raza A. Khan
6.	The Arbitration Laws in Pakistan	M. Mahmood
7.	Civil Courts Ordinance, 1962	Nisar Ahmad Nisar

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-55/2022-R
Particulars of post	Principal/ Vice Principal/ Headmistress (BS-19), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.
Minimum Qualification & Experience:	(i) Second Class or Grade 'C' Master's Degree with B.Ed. (Hons)/ B.Ed./M.Ed. or equivalent qualification from a university recognized by the HEC. (ii) Twelve (12) years post qualification teaching experience including at least 3 ½ years of administrative experience in recognized educational Institutions.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: 50 Marks

(Human Resource, Financial Management,
Quality Management and Information Technology)

I. Human Resource and Financial Management

Definition, Significance and Scope of Human Resource Management; Organization—Types of Organization, Theory of Organization, Principles of Organization, Organization of the Federal and Provincial Governments, Public Sector Enterprises; Approaches to Human Resource Management. Personnel Administration—Tools of Personnel Management: Selection, Training, Promotion, Compensation, Discipline; Communication, Communication Channels and Principles of Public Relations; Human Behaviour and Organizations Administration.—Elements of Financial Administration, Performance Programmed Budgeting, Capital Budget, Principles of Budgeting, Auditing and Accounting.

II. Basic Concept of Quality Management

ISO-9000, ISO-13000, other certifications regarding quality measurement; management, management for Results, Setting Performance Goals and Targets; Job Analysis: Job Description, Job Specification, Performance Evaluation;

III. Information Technology and MS Office

Fundamentals of Computer: CPU, Memory Devices, Types of Computers, Characteristics of Computer and related material; Application Software: Microsoft Word, Microsoft Power Point, Microsoft Excel; Search Engines, Web Design, Email, Internet Surfing, Social Networking (Facebook, Twitter, etc); General Introduction to Virus and Antivirus utilities; Programming Languages

Part-III: (Professional) 25 Marks (Descriptive)**I. Development of Curriculum and Instructional Material**

- Elements of Curriculum.
- Curriculum Development Process: Need Assessment, Formulation of Aims and Objectives, Taxonomies of Educational Objectives, Selection of Content, Development of Curricular Materials.

II. Process of Teaching and Teaching Strategies

- Process of Classroom Communication
- Factors affecting Classroom Communication
- Barriers to Classroom Communications
- Use of Instructional Materials and Media

III. Educational Assessment and Evaluation

- Concept of Classroom Assessment and Evaluation
- Distinction between Assessment, Evaluation and Measurement
- Approaches to Evaluation: Formative Evaluation; Summative Evaluation
- Types of Test: Essay Type; Objective Type: Multiple Choice, True-False Items, Matching Type; Principles of Construction of these Test
- Characteristics of a Good Test: Validity, Reliability, Objectivity, Usability

IV. Research Methods in Education

- Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
- Research Proposal and Report Writing

SUGGESTED READINGS

S. No.	Title	Author
1.	Human Resource Management	H.T.Graham & Roger Bennett
2.	Management	James A.F.Stoner, R.Eward Freeman, Daniel R.Gilbert Jr.
3.	Understanding Computer: Today and Tomorrow	Deborah Morley, Charles Parker
4.	MS Office 365 Handbook: 2013 Edition	Kevin Wilson
5.	Research in Education	JW Best
6.	Integrating Education Technology into Teaching	Roblyer
7.	Curriculum Development	S. M. Shahid
8.	Educational Measurement and Evaluation	S. M. Shahid
9.	Educational Administration	S. M. Shahid

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-56/2022-R
Particulars of post	Director (Economics Law) (BS-19) , Petroleum Division, Ministry of Energy.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i. Second Class or Grade 'C' Bachelor's Degree in Law (LLB) from a University recognized by HEC. ii. Twelve (12) years post qualification experience on such position where responsible for practicing of Corporate Laws in Government/ Semi-Government/ Firm of repute.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II (Professional) (Subjective) : 75 Marks**I. Corporate Law****II. International Economic Law**

- Definition and fundamental principles of international economic law
- Permanent sovereignty over natural resources (PSNR)
- The institutional structure of international economic law
- The law on natural resources
 - i. The Stockholm Declaration 1972
 - ii. The Charter of Economic Rights and Duties of States 1974
 - iii. UN Convention on the Law of the Sea 1982
 - iv. The Brundtland Commission
 - v. The UN Convention on Biological Diversity 1992

III. Miscellaneous

- Law of Contract
- Law of Business Organizations
- Public International Law
- Alternate Dispute Resolution
- Insurance Laws
- Competition Law
- Interrelation of Statutes
- Conflict of Laws
- Labour Laws
- Public Interest Litigation

SUGGESTED READINGS

S. No.	Title	Author
1.	Law of Contract	Koffman, Lawrance & Macdonalid, Elizabeth
2.	The Contract Act, 1872 (Section 1-147)	
3.	Essentials of Business Law	Anthony L. Livzz
4.	A Handbook of Company Law.	Chaudhry, A.M.
5.	Principles of Public International Law	Browntee, Ian
6.	Modern Treaty Law and Practice	Aust, Anthony
7.	Treaties: http://treaties.un.org/Home.aspx	
8.	Understanding Statutes: Canons of Construction	Zafar, S.M.

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-57/2022-R
Particulars of post	Deputy Director/ Protector of Emigrants (BS-18), Bureau of Emigration & Overseas Employment, Ministry of Overseas Pakistanis & Human Resource Development
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's Degree in any of the Social Sciences/ Management Sciences/ LLB from a University recognized by the HEC. ii. Five (5) years post qualification experience in BS-17 in Labour/ Manpower and Overseas Employment Service/ Technical or Vocational Training/ Planning/ Economic Development. OR Five (5) years post qualification practice as Lawyer in the Courts.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: 50 Marks (Descriptive)

(Public Administration, Office Management & Professional)

- I. **Public Administration:** Nature and scope, Role of Public Administration in a modern Welfare State;
- II. **Bureaucracy:** Concept of Bureaucracy, Theories of Bureaucracy, Ecology of Bureaucracy; Bureaucracy; of Pakistan as a Change Agent;
- III. **Administrative Leadership:** Approaches to the study of Leadership, Forms of Leadership, Leadership qualities;
- IV. **Administrative Accountability:** Internal and External Controls; Executive Control, Legislative Control, Judicial Control, Ombudsman, Public Opinion and Pressure Groups; Problems of Administrative Accountability in Pakistan;
- V. **Controlling and Co-Ordination:** Forms of Controls, Control Mechanism, the process of Control, Principles of Controlling; Principles Coordination; Machinery for Coordination; Problems of Coordination in Public Administration in Pakistan.
- VI. Civil Servant Act 1973 and Rules made thereunder;
- VII. Rules of Business 1973;
- VIII. Secretariat Instructions and Office Procedures;
- IX. Public Procurement Ordinance and Rules 2004.
- X. International Migration Convention 2003
- XI. Emigration Ordinance and Rules, 1979
- XII. Impact of Illegal Migration/Human Trafficking
- XIII. Issues of Pakistani Migrant Workers
- XIV. Importance of pre-departure Orientation & Briefing for Intending Emigrants

Part-III: 25 Marks (Descriptive)

(Human Resource, Financial Management and Quality Management)

I. Human Resource and Financial Management

Definition, Significance and Scope of Human Resource Management; Organization—Types of Organization, Theory of Organization, Principles of Organization, Organization of the Federal and Provincial Governments, Public Sector Enterprises; Approaches to Human Resource Management. Personnel Administration—Tools of Personnel Management: Selection, Training, Promotion, Compensation, Discipline; Communication, Communication Channels and Principles of Public Relations; Human Behaviour and Organizations Administration.—Elements of Financial Administration, Performance Programmed Budgeting, Capital Budget, Principles of Budgeting, Auditing and Accounting.

II. Basic Concept of Quality Management

ISO-9000, ISO-13000, other certifications regarding quality measurement; management, management for Results, Setting Performance Goals and Targets; Job Analysis: Job Description, Job Specification, Performance Evaluation;

SUGGESTED READINGS

S. No.	Title	Author
1.	An Introduction to the Public Administration	E.N. Cladden
2.	Bureaucracy: Modern Society	Pebr, M. Blau.
3.	Public Administration for a Welfare State	Paul Abbleby
4.	The Bureaucracy of Pakistan	Charles F. Kennedy
5.	Human Resource Management	H.T.Graham & Roger Bennett
6.	Management	James A.F.Stoner, R.Eward Freeman, Daniel R.Gilbert Jr.

PAPER-II: PROFESSIONAL**Max Marks: 100****Time Allowed: 3 Hours**

Case No.	F.4-58/2022-R
Particulars of post	Deputy Chief (IT) (BS-19) , Federal Public Service Commission.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's degree in Computer Science or Information Technology or equivalent qualification from a University recognized by the HEC. OR Second Class or Grade 'C' Bachelor's (4 years duration) degree of BCS or BS (IT) or BS (CS) or equivalent qualification from a University recognized by the HEC. OR Second Class Grade 'C' Bachelor's degree in Software Engineering or Computer Engineering or Computer System Engineering or equivalent qualification from a University recognized by the HEC with registration from Pakistan Engineering Council.</p> <p>ii. Twelve (12) years post qualification experience in the field of Information Technology/ System Analysis & Design/ Software Development/ Computer Programming/ Website Management/ Administration of Data-base System.</p>

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II (Professional) (Subjective): 75 Marks**I. Data Structures and Algorithms**

Abstract data types, Hardware Reverse Engineering of embedded systems, divide and conquer algorithms, Sorting algorithms (selection, insertion, merge, quick, bubble, heap, shell, radix, bucket), queue, dequeuer, priority queues (linked and array implementations of queues), linked list & its various types, sorted linked list, searching an unsorted array, memory management and garbage collection.

II. Data Encryption and Security

Advanced Forensics Techniques for Windows/MacOS/Linux/Android, Cryptographic algorithms and design principles, including conventional and symmetric encryption (DES, IDEA, Blowfish, Rijndael, RC-4, RC-5), public key or asymmetric encryption (RSA, Diffie-Hellman), key management, hash functions (MD5, SHA-1, RIPEMD-160, HMAC), digital signatures and certificates. Authentication protocols (X.509, Kerberos), electronic mail security (S/MIME, PGP), web security and protocols for secure electronic commerce (IPSec, SSL, TLS, SET). Security mechanism (ASLR, DEP, SHE, Android Permission Modelling and sandboxing)

III. Cyber Security

Basic security concepts, Information security terminology, Malware classifications, Types of malware. Server side web applications attacks. Cross-site scripting, SQL Injection, Cross-site request forgery, Planning and policy, Network protocols and service models. Transport layer security, Network layer security, Wireless security, Cloud Networks & IoT vulnerabilities and security.

IV. Information Security

Information security foundations, security design principles; security mechanisms, symmetric and asymmetric cryptography, encryption, hash functions, digital signatures, key management, authentication and access control; software security, vulnerabilities and protections, malware, database security; network security, firewalls, intrusion detection; security policies, policy formation and enforcement, risk assessment, cybercrime, law and ethics in information security, privacy and anonymity of data.

SUGGESTED READINGS

Sr. No.	Title	Author
1.	Data Structures and Algorithms in C++	Adam Drozdek
2.	Data Structures and Algorithm Analysis in Java	Mark A. Weiss
3.	Data Structures and Abstractions with Java	Frank M. Carrano & Timothy M. Henry
4.	Data Structures and Algorithm Analysis in C++	Mark Allen Weiss
5.	Java Software Structures: Designing and Using Data Structures	John Lewis and Joseph Chase
6.	Cryptography and Network Security: Principles and Practice, 6th edition	William Stallings,
7.	Security+ Guide to Network Security Fundamentals	Mark Ciampa
8.	Corporate Computer Society	Randall J.Boyle, 3rd Edition
9.	Computer Security: Principles and Practice, 3rd edition	William Stallings
10.	Principles of Information Security, 6th edition	M. Whitman and H. Mattord
11.	Computer Security, 3rd edition	Dieter Gollmann
12.	Computer Security Fundamentals, 3rd edition	William Easttom
13.	Official (ISC) 2 Guide to the CISSP CBK, 3rd edition	