

**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. 10/2023**

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	204/2023	Lecturer (Male) (BS-17), A. English B. Health & Physical Education Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), Colleges, Ministry of Defence.	Second Class or Grade 'C' Master's Degree or equivalent qualification in the relevant subject.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Subject Test = 50 marks Part-III Professional Test = 30 marks	For (A) English Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II (Masters Level) <ul style="list-style-type: none"> • English Literature 16th to 20th Century. • Linguistics. • English Language Teaching. • Syntax. • Diction. Part-II (30 Marks) <ul style="list-style-type: none"> • Teaching Techniques and Methodology, • Classroom Management and Discipline, • Testing and Evaluation • Knowledge of Bloom's Taxonomy For (B) Health & Physical Education Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II (Masters Level) <ul style="list-style-type: none"> • Philosophy of Physical Education, • Curriculum Development in Physical Education, • Psychology of Physical Education, • Rules of games (Hockey, Volley Ball) • Basics of Human Anatomy • Sports Nutrition, • Trauma and Rehabilitation, • Research Methodology in Physical Education • Test, Measurement and Evaluation in Physical Education & Sports • Athletic Injuries, • Handicap Sports Organization Part-III <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
2.	205/2023	Lecturer (Female) (BS-17), A. Mathematics B. Persian Islamabad Model Colleges, Federal Directorate of Education, Ministry of Federal Education & Professional Training.	Second Class or Grade 'C' Master's Degree or equivalent in the relevant subject.	Objective Type Test (MCQ) <u>Part-I</u> English = 20 marks <u>Part-II</u> Subject Test = 50 marks <u>Part-III</u> Professional Test = 30 marks Note: Note: <ul style="list-style-type: none"> ▪ In Language Subjects other than English (i.e Persian), English part will be of 10 marks. There will be 60 marks for subject Test and 30 marks for Professional Test. 	<u>For (A) Mathematics</u> <u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring <u>Part-II (Masters Level)</u> <ul style="list-style-type: none"> • Calculus/Differentiation, Integration, Limits of continuity • General Theorems (Rolle's Theorem, Mean Value Theorem) • Areas and Volumes, centre of Mass • Computing Tools for Mathematicians, • Mathematical Statistics, • Mathematical Spaces (Sets, Vector Spaces, Metric Spaces, topological spaces Tensors, • Differential Equations. <u>Part-III</u> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy <hr/> <u>For (B) Persian</u> <u>Part-I (10 Marks)</u> Vocabulary, Grammar Usage, Sentence Structuring. <u>Part-II (Masters Level) (60 Marks)</u> <ul style="list-style-type: none"> • Classical Persian Prose and Poetry • Modern Persian Literature, • History of Persian Language and Literature, • Study of Iranian History and Culture, • Iqbal's Persian Poetry and Thoughts. <u>Part-III (30 Marks)</u> <ul style="list-style-type: none"> • Teaching Techniques and Methodology, • Classroom Management and Discipline, • Testing and Evaluation, • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
3.	207/2023	Nurse (Male/Female) (BS-16) , Anti-Narcotics Force, Ministry of Narcotics Control.	i. Bachelor's degree in Nursing or equivalent qualification recognized by Pakistan Nursing Council. ii. Registration with Pakistan Nursing Council. OR i. Three (3) years diploma in Nursing with 01 year Course / Certificate in Midwifery / Nursing. ii. Registration with Pakistan Nursing Council.	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"> • Basic Medical Sciences • General Nursing • Ward Administration • Hospitality of the Patients • Care vs. Cure for Health Management
4.	208/2023	Assistant Mechanical Engineer (BS-17) , Mechanical Engineering Department of Pakistan Railways (Railway Board), Ministry of Railways.	i. Bachelor's degree in Mechanical Engineering or equivalent qualification. ii. Registration with PEC required.	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"> • Heat Transfer • Thermodynamics • Industrial Materials • Machine Design and Drawing • Mechanics of Machines • Production Management & Quality Control • Workshop Technology • Hydraulic Machines • Project Management • Basic IT/Computer Knowledge
5.	209/2023	Assistant Electrical Engineer (BS-17) , Electrical Engineering Department of Pakistan Railways Ministry of Railways.	Bachelor of Engineering degree in Electrical/ Electronics.	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"> • Power Generation/Transmission, • AC. DC. Machines, • Power and Digital Electronics, • Electric Circuits, • Semiconductor Devices, • Operational Amplifiers, • Oscillator & Circuit Theory, • Logic Design & Switching Theory, • Rules and Instructions of Repairs of the Multilayer Printed Circuit Boards, • Use of Specialized Diagnostic Test Equipments, • RF Devices.

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
6.	210/2023	Research Associate (BS-16) , National Institute of Population Studies, Ministry of National Health Services, Regulations & Coordination.	Second Class or Grade 'C' Master's degree in Economics / Statistics / Sociology / Anthropology / Demography from a University recognized by the HEC. OR i. Second Class or Grade 'C' Bachelor's degree in Economics / Statistics / Sociology / Anthropology / Demography from a University recognized by the HEC. ii. Two (2) years post qualification experience in the relevant 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"> • Methods of Data Collection and Analysis of Data, • Report Writing and Presentation Skill, • Project Planning and Management, • Personnel Management • Research Methodology
7.	211/2023	Supervisor (BS-16) , National Nuclear Detection Architecture (NDA), Revenue Division, Federal Board of Revenue.	Second Class or Grade 'C' Master's or Bachelor's (4 years duration) degree in Business Administration / Commerce / Economics / Statistics / Information Technology (IT)/ Computer Science or LLB or equivalent qualification from a University recognized by the 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"> • Principles of Management • Human Resource Management • Financial Management • Management Information System • Civil Servants Act 1973 and Rules made thereunder • Civil Servants (Appointment, Promotion and Transfer) Rules, 1973
8.	212/2023	Lecturer (BS-17) , A. Business Administration (Marketing/ Human Resource Management) B. Mathematics C. Physics Naval Headquarters, Ministry of Defence.	Second Class or Grade 'C' Master's degree in relevant subject.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Subject Test = 50 marks Part-III Professional Test = 30 marks	For (A) Business Admn. (Marketing/HRM) Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II (Masters Level) <ul style="list-style-type: none"> • Business Finance • Principles of Management • Human Resource Management • Business Law • Business Research Methods • Financial Management • Marketing Management • Production/Operation Management • Management Information System Part-III <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (B) 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 • General Theorems (Rolle's Theorem, Mean Value Theorem) • Areas and Volumes, centre of Mass • Computing Tools for Mathematicians, • Mathematical Statistics, • 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 • Knowledge of Bloom's Taxonomy <hr/> <p><u>For (C) 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"> • Mechanics • Heat and Thermodynamics, • Waves and Optics, • Electrostatic, • Electricity and Magnetism, • Modern and Quantum Physics, • Nuclear Physics, • Basic Solid State Physics, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
9.	215/2023	<p>Lecturer (Female) (BS-17)</p> <p>A. Botany B. Chemistry C. Computer Science D. Economics E. Geography F. Health & Physical Education G. Home Economics (Arts & Design) H. Home Economics (Human Development & Family Studies) I. Islamic Studies J. Mass communication K. Mathematics L. Pakistan Studies M. Psychics N. Psychology O. Sociology P. Zoology.</p> <p>Islamabad Model Colleges, Federal Directorate of Education, Ministry of Federal Education and Professional Training</p>	<p>Second Class or Grade 'C' Master's degree or equivalent in the relevant subject.</p>	<p>Objective Type Test (MCQ)</p> <p>Part-I English = 20 marks</p> <p>Part-II Subject Test = 50 marks</p> <p>Part-III Professional Test = 30 marks</p>	<p>For (A) Botany</p> <p>Part-I Vocabulary, Grammar Usage, Sentence Structuring</p> <p>Part-II (Masters Level)</p> <ul style="list-style-type: none"> • Algae, • Fungi, • Bryophytes • Pteridophytes, • Gymnosperms, • Angiosperms, • Plant Physiology, • Ecology, • Cytology, • Genetics, • Evolution <p>Part-III</p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy <p>For (B) Chemistry</p> <p>Part-I Vocabulary, Grammar Usage, Sentence Structuring.</p> <p>Part-II (Masters Level)</p> <ul style="list-style-type: none"> • Nature, Properties & States of Matter, • Electronic Structure, • Bonding, • Chemical Kinetics & Radioactivity, • Synthetic Chemistry • Polymers, • Reaction Mechanism (electrophilic & nucleophilic substitution and addition reaction) • Inorganic Chemistry, • Thermodynamics, • Electrochemistry, <p>Part-III</p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (C) 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"> • Computer Hardware/Software, • Data Communication & Networking, • C/C++ Language, • Visual Basic, • Operating System Unix/Linux • Windows XP, 2000, • Oracle/PLSQL, • System Analysis & Design. • 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, • Knowledge of Bloom's Taxonomy <hr/> <p><u>For (D) 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: Meaning, Scarcity and Opportunity Cost. • Goals of Microeconomics Policy: Efficiency & equity • Macro Economics: Basic Economic Concepts • The theory of Factor Pricing • Monetary Theory & Public Finance, • Industrial Development in Pakistan • Interest Free Banking in Pakistan • Basic Statistics on Economy of Pakistan <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (E) Geography</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"> • Physical Geography • Landform development, climate, oceans & seas, factor of climate and environmental change • Geography of Pakistan, • Human Geography • Political Geography (State, National and Nation-State Geopolitics of uneven development) • Statistical Geography, • Climatology/Metrology, • Environmental Geography, • GIS Techniques, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy <p><u>For (F) Health & Physical Education</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"> • Philosophy of Physical Education, • Psychology of Physical Education, • Rules of games • Basics of Human Anatomy • Administrative and Management in Sports, • Sports Nutrition, • Trauma and Rehabilitation, • Research Methodology in Physical Education • Test, Measurement and Evaluation in Physical Education & Sports • Sports Injuries, • Sports with physical disabilities <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (G) Home Economics (Arts & Design)</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 • Nutrition Health and Prevention • Methods of Research in Home Economics • Introduction to Art and Design • Applied Arts • Pattern Making • Fundamentals of Interior Design <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy <p><u>For (H) Home Economics (Human Development & Family 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"> • 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 • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p>For (I) 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 چیلینجز</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 • Knowledge of Bloom's Taxonomy <p>For (J) Mass Communication</p> <p>Part-I Vocabulary, Grammar Usage, Sentence Structuring.</p> <p>Part-II (Masters Level)</p> <ul style="list-style-type: none"> • Pros and Cons of Social Media • Press laws in Pakistan • Newsprint Control Ordinance 1971 • Advertisement and Public Policy • Code of Ethics • Communication theories of social change • Newspaper Employees (Condition of service) Act 1973 • PEMRA Ordinance, 2007 • Reporting and Writing

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					<p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy <p><u>For (K) 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 • General Theorems (Rolle's Theorem, Mean Value Theorem) • Areas and Volumes, centre of Mass • Computing Tools for Mathematicians, • Mathematical Statistics, • 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 • Knowledge of Bloom's Taxonomy <p><u>For (L) Pakistan 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 • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (M) 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"> • Mechanics • Heat and Thermodynamics, • Waves and Optics, • Electrostatic, • Electricity and Magnetism, • Modern and Quantum Physics, • Nuclear Physics, • Basic Solid State Physics, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology • Classroom Management and Discipline • Testing and Evaluation • Knowledge of Bloom's Taxonomy
					<p><u>For (N) 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 • Biological basis of Behaviour • 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 • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><u>For (O) 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 • Knowledge of Bloom's Taxonomy
					<p><u>For (P) Zoology</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"> • Eco System, • Classification of Fish, Reptiles, Mammals, • Classification of Mollusks, Edinodermata, • Theories of Evolution, • Mammalian Hormonal System, • Membrane System, • Mammalian Gametogenesis and Fertilization, • Multiple Alleles. • Mendelian laws of inheritance, • Reproduction and Development, <p><u>Part-III</u></p> <ul style="list-style-type: none"> • Teaching Techniques and Methodology, • Classroom Management and Discipline, • Testing and Evaluation, • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
10.	216/2023	Librarian (BS-16) , Federal Government Organization.	Second Class or Grade 'C' Bachelor's Degree or equivalent with diploma in Library Science. OR Second Class or Grade 'C' Bachelor's Degree in Library Science or equivalent.	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"> • Introduction to Library & Information Science • Information Sources and Services • Classification: Theory and Practice • Cataloguing: Theory and Practice • Collection, Maintenance and Issuance of Library Books. • Management of Libraries & Information Centres • Library Automation/Information Storage & Retrieval • Research Methods & Techniques for Librarians • Rules & Procedures of Write off the Library Losses • Classification of Records • Connectivity with Academia, Fund Generation. • Role of ICTs in Libraries
11.	217/2023	Inspector (Tech) (BS-16) , Federal Government Organization. NOTE: (i) To short list the candidates at first stage MCQs Screening Test shall be held. Thereafter subjective type Technical 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.	i. B. Tech. in Electronics or equivalent in relevant subject from Government recognized Institute/ University. ii. Two (2) years post qualification practical experience in the field of Electronics. OR Retired JCOs/Retired Foreman of Corps of Signals with ten (10) years' experience in the related field.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks Subjective Test Technical Proficiency Test=100 marks Qualifying Standard= 50%	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Electrical and Electronic circuits • Working of RF Communication System • Telecommunication systems • Working of CCTV Systems, • Remote Control System and audio/video recording gadgets • Designing of ordinary prototype circuits For Pre-selected candidates <ul style="list-style-type: none"> • Electrical and Electronic circuits, their application and troubleshooting • Working and troubleshooting of RF Communication System • Telecommunication systems and Telephone exchange • Working of CCTV Systems, Remote Control System and audio/video recording gadgets • Designing of ordinary prototype circuits

Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 included in Consolidated Advertisement No. 10/2023

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
2.	Practical English Usage	M. Swan
3.	Practical English Grammar and Composition	S.C. Gupta
4.	Improve your Punctuation & Grammar	Marion Field
5.	The Little, Brown Handbook	H. Ramsey Flower & Jane Aaron
6.	A University English Grammar	R. Quirk & S. Greenbaum
7.	Write Better, Speak Better	Readers Digest Association
8.	Modern English in Action	Henry Christ
9.	Exploring the World of English	Syed Saadat Ali Shah

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

Case No.	F.4-206 (A)/2023-R
Particulars of post	Associate Professor (Female) (BS-19) (Islamiyat) , F.G Colleges, Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with eight (8) year 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 & Part-III.

Part-II: (Islamiyat) (Subjective): 50 Marks**I. Islam: the Code of Life**

- Salient features of Islamic;
- Social System
- Political System
- Economic System
- Judicial System
- administrative System
- Responsibilities of civil servants

II. Study of Seerah

Need and importance of the study of Seerah Prophet Mohummad (PBAH) as;

- The Role Model
- Merciful for the universe.
- Preacher
- Diplomat
- Teacher and Educationalist
- Revolutionary Leader

III. Islamic Civilization and Culture:

- Meanings and the vital elements
- The role of civilisation in the development of the human personality and communities
- Distinctions of Islamic Civilization;
 - Tauheed
 - Spiritualism
 - Dignity of Man
 - Equality
 - Social Justice
 - Moral values
 - Tolerance
 - Rule of Law

IV. Islam and World

- Impact of Islamic Civilization on the West and vice-versa.
- Muslim World and the Contemporary Challenges
- Interaction between East and West.
- The role of Islam in the modern world.

I. اسلامی ضابطہ حیات

⇨ اسلامی نظام کی نمایاں خصوصیات:

- سماجی نظام
- سیاسی نظام
- اقتصادی نظام
- عدالتی نظام
- انتظامی نظام

⇨ سرکاری ملازمین کی ذمہ داریاں

II. سیرت النبی کا مطالعہ

⇨ سیرت النبی کے مطالعہ کی اہمیت اور ضرورت بطور:

- نمونہ عمل
- پیغمبر امن
- مسلخ
- سفارت کار
- معلم انسانیت
- انقلابی رہنما

III. اسلامی تہذیب و ثقافت

⇨ اسلامی تہذیب و ثقافت کے معانی اور اہم اجزا

⇨ سماج اور انسانی شخصیت کی تعمیر میں تہذیب کا کردار

⇨ اسلامی تہذیب کے نمایاں اوصاف:

- توحید
- رسالت
- تزکیہ نفس
- انسانی عزت و وقار
- مساوات
- سماجی انصاف
- اخلاقی اقدار
- صبر و برداشت
- قانون کی حکمرانی

IV. اسلام اور دنیا:

⇨ اسلامی تہذیب کے مغرب اور مغرب کے اسلامی تہذیب پر اثرات

⇨ اسلام اور عصر حاضر کے چیلنجز

⇨ مشرق اور مغرب کے درمیان بات چیت

⇨ جدید دنیا میں اسلام کا مقام

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.	Islam: its meaning and Message	Khurshid Ahmad
2.	Islam: The Misunderstood Religion	Muhammad Qutub
3.	Towards Understanding Islam	Abul Aala Moudoodi
4.	Ideals and Realities of Islam	Hussain Nasr,
5.	A brief Survey of Muslim Science and Culture	Muhammad Abdur –Rahman
6.	Quranic Sciences	Afzalur Rahman
7.	Tahzeeb o Tamaddon e Islami	Rasheed Akhter Nadvi
8.	Islamic Civilization: Foundations Belief & Principles	Abul A' la Mawdudi
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.4-206 (B)/2023-R
Particulars of post	Associate Professor (Female) (BS-19) (Mathematics) , F.G Colleges, Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with eight (8) year 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. Fourier series and partial differential equations

- Trigonometric Fourier series; sine and cosine series; Bessel inequality; summation of infinite series; convergence of the Fourier series.
- Partial differential equations of first order; classification of partial differential equations of second order; boundary value problems; solution by the method of

separation of variables; problems associated with Laplace equation, wave equation and the heat equation in Cartesian coordinates.

VI. Numerical Methods

- Solution of nonlinear equations by bisection, secant and Newton-Raphson methods; the fixed- point iterative method; order of convergence of a method.
- Solution of a system of linear equations; diagonally dominant systems; the Jacobi and Gauss-Seidel methods.
- Numerical solution of an ordinary differential equation; Euler and modified Euler methods; Runge- Kutta methods.

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.	Elements of Numerical Analysis	F. Ahmad and M.A Rana
7.	Mathematical Methods	S. M. Yousaf, Abdul Majeed and Muhammad Amin
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.4-206 (C)/2023-R
Particulars of post	Associate Professor (Female) (BS-19) (Pak. Studies) , F.G Colleges, Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with eight (8) year 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 & Part-III.

Part-II: (Pak Studies) (Subjective) : 50 Marks

- Ideology of Pakistan-----definition and elucidation, historical aspects: Muslim rule in the Sub-Continent, its downfall and efforts for Renaissance. Movements for reforms-- Shaikh Ahmad Sarhindi, Shah Waliullah, Sayyid Ahmad Shaheed, Aligarh, Deoband, Nadwah, and other educational institutions-----Sindh Madrassah and Islamia College Peshawar. Ideology of Pakistan in the light of Speeches and statements of Allama Iqbal and Quaid- i Azam Muhammad Ali Jinnah.
- Changing Security Dynamics for Pakistan: Challenges to National Security of Pakistan
- Pakistan War on Terror
- Foreign Policy of Pakistan Post 9/11
- Evolution of Democratic System in Pakistan
- Hydro Politics ; Water Issues in Domestic and Regional Context
- Pakistan's Energy Problems and their Effects
- Pakistan's Relations with Neighbours
- Pakistan and India Relations Since 1947
- Kashmir Issue
- The war in Afghanistan since 1979 and its impact on, and challenges to Pakistan.
- War against Terrorism since 2001 onwards
- The Prevailing Social Problems of Pakistan and the Strategies to Deal with them: Over Population, Poverty, Education, Health and Sanitation.

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.	Federalism and Ethnic Conflict Regulation in India and Pakistan.	Adeney, Katharine.
2.	Labour, Democratization and Development in India and Pakistan.	Candland, Christopher,
3.	Frontline Pakistan: The Struggle with Militant Islam.	Hussian, Zahid.
4.	Modern South Asia: History, Culture, Political Economy	Jalal, Aisha and Bose, Sugata.,
5.	Back to Pakistan: A Fifty Year Journey.	Mass, Leslie Noyes.
6.	Pakistan: Manifest Destiny.	Qureshi, Atiff.
7.	Pakistan, America, and Future of Global Jihad	Riedel, Bruce. Deadly Embrace:
8.	Kashmir in Conflict: India, Pakistan and the Unending War.	Schofield, Victoria.
9.	The Emergence of Pakistan	Ch. Muhammad Ali
10.	The Last Mughal	William Dalrymple
11.	Jinnah of Pakistan	Stanley Wolpert
12.	A Brief History of Pakistan.	Wynbrandt, James.
13.	Pakistan's Energy Sector: From Crisis to Crisis-Breaking the Chain	Zaid Alahdad
14.	Research in Education	JW Best
15.	Integrating Education Technology into Teaching	Roblyer
16.	Curriculum Development	S. M. Shahid
17.	Educational Measurement and Evaluation	S. M. Shahid
18.	Educational Administration	S. M. Shahid

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

Case No.	F.4-206 (D)/2023-R
Particulars of post	Associate Professor (Female) (BS-19) (Physics) , F.G Colleges, Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with eight (8) year 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 & Part-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; Dynamics of rigid body; spin and precession; gyroscope; 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. Fluid Mechanics

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

III. Waves and Oscillation

- Free oscillation with one and two degrees of freedom; forced and damped oscillations and phenomenon of resonance. Simple harmonic motion. Traveling waves and transmission of energy; Phase and Group velocity; standing waves. Basics of sound waves.
- Reflection, Refraction, Interference, Diffraction and Polarization of waves; interferometer and Newton's rings; Diffraction Gratings and their resolving power; spectrometers. Electromagnetic wave equation; normal and anomalous dispersion; coherence, lasers and applications.

IV. 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; kinetic theory of gases; Maxwellian distribution of molecular velocities; Brownian motion; Transport phenomena. Classical Maxwell-Boltzmann Statistics and its application; Quantum Bose—Einstein and Fermi—Dirac Statistics.

V. Electricity and Magnetism

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

VI. Modern and Quantum Physics

Operators and quantum states, observables, time dependent and independent Schrodinger equation, angular momentum, spin-1/2 particle in a magnetic field, wave mechanics, particle in a box, tunneling, one-dimensional harmonic oscillator, 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. Photo electric effect Compton scattering; pair production; Lande's g factor and Zeeman effect. Raman effect; Waves and particles and De Broglie's Hypothesis.

VII. 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.

VIII. Nuclear Physics

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

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.	The Cosmic Code: Quantum Physics as the Language of Nature	Heinz R. Pagets
9.	Physics of the Life Science	Jay Newman
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.4-213 (A)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Business Administration) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching 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.4-213 (B)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Economics) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching 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.4-213 (C)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18), (Health & Physical Education) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & Part-III.

Part-II: (Health and Physical Education) (Subjective) : 50 Marks**I. Philosophical Basis of Physical Education**

Philosophy and Physical Education, Physical Education as Discipline, Scientific Foundation of Physical Education, Physical Education and Recreation, Leadership in Physical Education

II. Scientific Sports Coaching

Sports Planning, Periodisation of Training, Systemization of Training, Data Collection, Coach and Professional Ethics

III. Evaluation in Physical Education and Sports

Evaluation and Administration of Tests, Basic Statistics, Measurement of Physical Fitness, General Motor Ability, Cardiovascular Fitness, Rating Scales in Physical Education.

IV. Exercise Physiology

Muscular System and Exercise, Cardiovascular System and Exercise, Environment and Exercise, Nervous System and Exercise, Glandular System and Exercise, Gender Differences, Obesity

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

S. No.	Title	Author
1.	Health & Physical Education.	Dr. A. Waheed Mughal
2.	Education in Physical Education.	Shamshad Ahmed
3.	Sports in Society : Issue & Controversies,	Jay Coackley
4.	Modern Measurement.	Osterlind J. Steven
5.	Introduction to Measurement in PE and Exercise Science	Margaret J. Safrit PhD, Terry M. Wood PhD
6.	Physiology of Sports	Reilly T and Williams
7.	Essentials of Exercise Physiology.	Shaver
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.4-213 (D)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Information Technology) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Information Technology) (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.4-213 (E)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Pakistan Studies) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & Part-III.

Part-II: (Pak Studies) (Subjective) : 50 Marks

- Ideology of Pakistan-----definition and elucidation, historical aspects: Muslim rule in the Sub-Continent, its downfall and efforts for Renaissance. Movements for reforms-- Shaikh Ahmad Sarhindi, Shah Waliullah, Sayyid Ahmad Shaheed, Aligarh, Deoband, Nadwah, and other educational institutions-----Sindh Madrassah and Islamia College Peshawar. Ideology of Pakistan in the light of Speeches and statements of Allama Iqbal and Quaid- i Azam Muhammad Ali Jinnah.
- Changing Security Dynamics for Pakistan: Challenges to National Security of Pakistan
- Pakistan War on Terror
- Foreign Policy of Pakistan Post 9/11
- Evolution of Democratic System in Pakistan
- Hydro Politics ; Water Issues in Domestic and Regional Context
- Pakistan's Energy Problems and their Effects
- Pakistan's Relations with Neighbours
- Pakistan and India Relations Since 1947
- Kashmir Issue
- The war in Afghanistan since 1979 and its impact on, and challenges to Pakistan.
- War against Terrorism since 2001 onwards
- The Prevailing Social Problems of Pakistan and the Strategies to Deal with them: Over Population, Poverty, Education, Health and Sanitation.

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.	Federalism and Ethnic Conflict Regulation in India and Pakistan.	Adeney, Katharine.
2.	Labour, Democratization and Development in India and Pakistan.	Candland, Christopher,
3.	Frontline Pakistan: The Struggle with Militant Islam.	Hussian, Zahid.
4.	Modern South Asia: History, Culture, Political Economy	Jalal, Aisha and Bose, Sugata.,
5.	Back to Pakistan: A Fifty Year Journey.	Mass, Leslie Noyes.
6.	Pakistan: Manifest Destiny.	Qureshi, Atiff.
7.	Pakistan, America, and Future of Global Jihad	Riedel, Bruce. Deadly Embrace:
8.	Kashmir in Conflict: India, Pakistan and the Unending War.	Schofield, Victoria.
9.	The Emergence of Pakistan	Ch. Muhammad Ali
10.	The Last Mughal	William Dalrymple
11.	Jinnah of Pakistan	Stanley Wolpert
12.	A Brief History of Pakistan.	Wynbrandt, James.
13.	Pakistan's Energy Sector: From Crisis to Crisis-Breaking the Chain	Zaid Alahdad
14.	Research in Education	JW Best
15.	Integrating Education Technology into Teaching	Roblyer
16.	Curriculum Development	S. M. Shahid
17.	Educational Measurement and Evaluation	S. M. Shahid
18.	Educational Administration	S. M. Shahid

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

Case No.	F.4-213 (F)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Psychology) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching experience at College/ University level.

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.

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.	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.4-213 (G)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Public Administration) , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one year post qualification teaching experience at College/ University level. OR M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years' post qualification teaching experience at College/ University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Public Administration) (Subjective)**50 Marks****I. Public Administration: Concepts, Approaches and Context**

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

II. Public Organization: Classical and Contemporary Theories and Concepts

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

III. Public Policy Planning, Implementation and Evaluation

Strategic Planning and Management; Planning Process; Policy Analysis; Policy Implementation; Program Evaluation; Planning Machinery; Role of Donors and International Institutions in Public Policy and Management; Policy making and implementation of Federal Government of Pakistan.

IV. Public Management Skills

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

V. Governance and Administrative Reforms

Theories of Administrative Reforms; Types of Administrative Reforms, Privatization, Regulation, De-regulation, Decentralization, Business Re-engineering, Quality Assurance; Administrative Reform in Pakistan.

VI. Public Administration: Accountability & Control

Bureaucratic Responsiveness; Representative Bureaucracy; Citizens Engagement in Public Service; Accountability & Control, The Concept and Approaches to Public Accountability of Public Service; Institutional Framework for Administrative Accountability; Legislative, Executive and Judicial Control over Administration, Administrative Corruption; Role of Civil Society in Good Governance, Media, Interest Groups, Civil Society Organizations; The Situation in Pakistan.

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.	Public Administration	Denhardt, R
2.	Public Administration – Understanding Management, Politics and Law in the Public Sector	David H. Rosenbloom
3.	Public Administration	Caiden, Gerald. E,
4.	Public Administration for the Twenty-First Century	Cooper et al,
5.	Organization Theory for Public Administration	Harmon, Michael M. & Mayer. Richard T
6.	Public Administration and Public Affairs	Nicholas Henry,
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.4-214 (A)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Chemistry) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Chemistry) (Subjective) 50 Marks

- I. Atomic structure.—Quantum theory, Schrodinger equation, Particle in box, hydrogen atom. Hydrogen moleculeion, hydrogen molecule. Theories of hydrogen and metallic bonding.
- II. Electrochemistry.—Ionic equilibria, theory of strong electrolytes; ebye-Huckel theory of activity coefficients, galvanic cells, membrane equilibria and fuel cells. Theories of Acids and Bases, glass electrode, measurement of pH. Electrolysis, overvoltage and corrosion.
- III. Thermodynamics.—First law of thermodynamics, internal energy, enthalpy functions. Thermochemistry, Entropy and second law of Thermodynamics, Free energy and chemical equilibrium.
- IV. Chemistry of Following Elements.—Oxygen, Carbon, Chlorine, Silicon, Nitrogen, Phosphorus.
- V. Inorganic Chemical Industries.—Sulphuric Acid, Fixation of Nitrogen, Chemical Fertilizers, Semi-conductivity devices. Cement, Glass and Ceramics.
- VI. Chemistry of Natural Products.—Elementary study of Carbohydrates. Oils and Fats. Alkaloids and Vitamins.
- VII. Industrial Organic Chemistry.—Organic Polymers. Fermentation processes including preparation of Anti-Biotics. Petro-Chemical Industry.

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.	Advanced Inorganic Chemistry 3 rd Ed.	Cotton. F.A. and Wilkinson Groffrey
2.	Inorganic Chemistry, 3 rd Ed. 1983	Hukeavy, James E.
3.	Physical Chemistry 5 th Ed.	Moore, Walter J.
4.	Mechanism & Structure in Organic Chemistry	Gould, Edwards
5.	Organic Chemistry 2 nd Ed.	Morrison, Robert Thornton & Boyd R.N.
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.4-214 (B)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Computer Science) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching 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**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 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.4-214 (C)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18), (English) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching 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
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.4-214 (D)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Mathematics) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching 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. Fourier series and partial differential equations

- Trigonometric Fourier series; sine and cosine series; Bessel inequality; summation of infinite series; convergence of the Fourier series.
- Partial differential equations of first order; classification of partial differential equations of second order; boundary value problems; solution by the method of separation of variables; problems associated with Laplace equation, wave equation and the heat equation in Cartesian coordinates.

VI. Numerical Methods

- Solution of nonlinear equations by bisection, secant and Newton-Raphson methods; the fixed- point iterative method; order of convergence of a method.
- Solution of a system of linear equations; diagonally dominant systems; the Jacobi and Gauss-Seidel methods.
- Numerical solution of an ordinary differential equation; Euler and modified Euler methods; Runge- Kutta methods.

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.	Elements of Numerical Analysis	F. Ahmad and M.A Rana
7.	Mathematical Methods	S. M. Yousaf, Abdul Majeed and Muhammad Amin
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.4-214 (E)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18), (Physics) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & Part-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; Dynamics of rigid body; spin and precession; gyroscope; 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. Fluid Mechanics

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

III. Waves and Oscillation

- Free oscillation with one and two degrees of freedom; forced and damped oscillations and phenomenon of resonance. Simple harmonic motion. Traveling waves and transmission of energy; Phase and Group velocity; standing waves. Basics of sound waves.
- Reflection, Refraction, Interference, Diffraction and Polarization of waves; interferometer and Newton's rings; Diffraction Gratings and their resolving power; spectrometers. Electromagnetic wave equation; normal and anomalous dispersion; coherence, lasers and applications.

IV. 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; kinetic theory of gases;

Maxwellian distribution of molecular velocities; Brownian motion; Transport phenomena. Classical Maxwell-Boltzmann Statistics and its application; Quantum Bose—Einstein and Fermi—Dirac Statistics.

V. Electricity and Magnetism

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

VI. Modern and Quantum Physics

Operators and quantum states, observables, time dependent and independent Schrodinger equation, angular momentum, spin-1/2 particle in a magnetic field, wave mechanics, particle in a box, tunneling, one-dimensional harmonic oscillator, 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. Photo electric effect Compton scattering; pair production; Lande's g factor and Zeeman effect. Raman effect; Waves and particles and De Broglie's Hypothesis.

VII. 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.

VIII. Nuclear Physics

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

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
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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.	The Cosmic Code: Quantum Physics as the Language of Nature	Heinz R. Pagets
9.	Physics of the Life Science	Jay Newman
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.4-214 (F)/2023-R
Particulars of post	Assistant Professor (Female) (BS-18) (Psychology) , Islamabad Model Colleges (Ex-F.G Colleges), Federal Directorate of Education, Islamabad, Ministry of Federal Education and Professional Training.
Minimum Qualification & Experience	Ph.D. Degree in the relevant subject and one (1) year post qualification teaching experience at College/University level. OR M. Phil in the relevant subject with three (3) years post qualification teaching experience at College/University level. OR Second Class or Grade 'C' Master's Degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

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.

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
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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