

**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. 08/2023 & 09/2023**

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	151/2023	<b>Senior Elementary Teacher (Drawing) (Female) (BS-16)</b> , Federal Directorate of Education, Ministry of Federal Education & Professional Training.	Second Class or Grade 'C' Master's Degree / Bachelor's Degree (04 years duration) in Fine Arts / Painting /Art and Design / Art and Craft with Second Class or Grade 'C' M.Ed. / B.Ed./B.Ed. (Hons)/ Associate Diploma in Education or equivalent qualification from a University recognized by HEC.	Objective Type Test (MCQ)  <b>Part-I</b> English =20 marks  <b>Part-II</b> Subject Test=40 marks  <b>Part-III</b> Professional Test=40 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Drawing &amp; Design Theory</li> <li>• Free Hand Sketches and Projected Measured Drawings</li> <li>• Technical Drawings &amp; Diagrammatic Illustration</li> <li>• Painting: Basic elements of Art, concepts, media and formats and the ability to apply them to their aesthetic intent.</li> <li>• Printmaking: Basic elements of art and design principles, concepts, media, and formats.</li> </ul> <b>Part-III</b> <ul style="list-style-type: none"> <li>• Education System in Pakistan,</li> <li>• Educational Psychology,</li> <li>• Class Room Management and Discipline,</li> <li>• Instructional Planning and Teaching Strategies,</li> <li>• Students Evaluation and Examination System,</li> <li>• Educational Guidance and Counselling.</li> </ul>
2.	154/2023	<b>Secondary School Teacher (SST) (Male) (BS-17)</b> , Directorate of Federal Government Educational Institutions (Cantts/ Garrisons) Schools, Ministry of Defence.	Second Class or Grade 'C' Master's Degree with B.Ed. or equivalent qualification from a University recognized by HEC. OR M.A (Education)/ M.A (EPM) from a University recognized by HEC.	Objective Type Test (MCQ)  <b>Part-I</b> English =20 marks  <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Perspectives of Education in Pakistan</li> <li>• School Administration &amp; Supervision</li> <li>• Planning &amp; Management in Education</li> <li>• Educational Psychology</li> <li>• Curriculum Development &amp; Assessment</li> <li>• Teaching Methodology</li> <li>• Classroom Management</li> <li>• Educational Measurement &amp; Evaluation</li> <li>• Research Techniques in Education</li> <li>• Educational System in Pakistan</li> <li>• Educational Guidance &amp; Counselling</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
3.	156/2023	<b>Junior Civilian Labour Officer (BS-16)</b> , Ordnance Corps, GHQ, Ministry of Defence.	Law Graduate.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>Core courses of <b>L.LB.</b> Degree Program.</li> <li>Labour Policies of the Government of Pakistan.</li> </ul>
4.	163/2023	<b>Medical Officer (BS-17)</b> , Border Health Services-Pakistan, Ministry of National Health Services, Regulations & Coordination.	MBBS or equivalent qualification recognized by PMDC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>Core courses of <b>MBBS</b> Degree Program.</li> <li>Health Policies of the Government of Pakistan.</li> <li>Care vs Cure for Health Management.</li> <li>Major Challenges being faced by Health Sector.</li> </ul>
5.	167/2023	<b>Lecturer (Female) (BS-17)</b> , A. Arabic B. Biology C. Botany D. Business Administration E. Chemistry F. Commerce G. Economics H. English I. Fine Arts J. History K. Health & Physical Education L. Information Technology M. Islamic Studies N. Mathematics O. Pak Studies P. Persian Q. Physics R. Political Science S. Psychology T. Public Administration U. Sociology V. Statistics W. Urdu X. Zoology Federal Government Educational Institutions (FGEI) Directorate, (Cantt/Garrisons) Colleges, Ministry of Defence.	Second Class or Grade 'C' Master's Degree or equivalent qualification in the relevant subject.	Objective Type Test (MCQ) <b>Part-I</b> English =20 marks <b>Part-II</b> Subject Test = 50 marks <b>Part-III</b> Professional Test=30 marks <b>Note:</b> <ul style="list-style-type: none"> <li>In Language Subjects other than English (i.e <b>Arabic, Persian and Urdu</b>), English part will be of 10 marks. There will be 60 marks for subject Test and 30 marks for Professional Test.</li> </ul>	<b>For (A) Arabic</b> <b>Part-I (10 Marks)</b> Vocabulary, Grammar Usage, Sentence Structuring. <b>Part-II (Masters Level) (60 Marks)</b> <ul style="list-style-type: none"> <li>History of Arabic literature</li> <li>Arabic Poetry at the Dawn of Islam</li> <li>Arabic Syntax</li> <li>Arabic Vocabulary,</li> <li>Arabic Grammar usage,</li> <li>Arabic Sentence Structure</li> </ul> <b>Part-III (30 Marks)</b> <ul style="list-style-type: none"> <li>Teaching Techniques and Methodology</li> <li>Classroom Management and Discipline</li> <li>Testing and Evaluation</li> <li>Knowledge of Bloom's Taxonomy</li> </ul> <b>For (B) Biology</b> <b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II (Masters Level)</b> <ul style="list-style-type: none"> <li>Theories of Evolution,</li> <li>Nucleic Acids,</li> <li>Cell Division,</li> <li>Nutrition,</li> <li>Ecosystem,</li> <li>Mendelian laws of inheritance,</li> <li>Diagnostic Characteristics of all the phyla or invertebrates and chordates,</li> <li>Division of Plants</li> </ul>

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

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b><u>For (E) Chemistry</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Nature, Properties &amp; States of Matter,</li> <li>• Electronic Structure,</li> <li>• Chemical Kinetics &amp; Radioactivity,</li> <li>• Reaction Mechanism (electrophilic &amp; nucleophilic substitution and addition reaction)</li> <li>• Inorganic Chemistry,</li> <li>• Thermodynamics,</li> <li>• Chemical Equilibrium,</li> <li>• Electrochemistry,</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>
					<p><b><u>For (F) Commerce</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Auditing</li> <li>• Cost Accounting</li> <li>• Managerial Economics</li> <li>• Computer Application in Business</li> <li>• Islamic Principles of Banking &amp; Finance</li> <li>• E-Commerce</li> <li>• Specialized financial Institutions</li> <li>• Salient features of Investment Analysis</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology,</li> <li>• Classroom Management and Discipline,</li> <li>• Testing and Evaluation,</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b><u>For (G) Economics</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Micro Economics: Determination of market demand and supply</li> <li>• Macro Economics: Basic Economic Concepts</li> <li>• International Trade: Theories, Trade Restrictions &amp; Trade Policy,</li> <li>• Economic Development: Historical growth development process and Theories, Structural Issues</li> <li>• WTO and Developing Economies,</li> <li>• Monetary Theory &amp; Public Finance,</li> <li>• Agriculture Development in Pakistan</li> <li>• Industrial Development in Pakistan</li> <li>• Energy Crises and Policy in Pakistan</li> <li>• Interest Free Banking in Pakistan</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b><u>For (H) English</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• English Literature 16<sup>th</sup> to 20<sup>th</sup> Century.</li> <li>• Linguistics.</li> <li>• English Language Teaching.</li> <li>• Syntax.</li> <li>• Diction.</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b><u>For (I) Fine Arts</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• History of Art, Design &amp; Architecture</li> <li>• Elements of Art</li> <li>• Drawing &amp; Design Theory</li> <li>• Linear Perspective</li> <li>• Elements &amp; Principles of Image Making</li> <li>• Painting: Basic elements of Art, concepts, media and formats.</li> <li>• Printmaking: Basic elements of art and design principles, concepts, media, and formats.</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>
					<p><b><u>For (J) History</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• The Prophetic Age (570-632)</li> <li>• The Pious Caliphate (632-660)</li> <li>• Political System of Islam under the Prophet (PBUH) and the Pious Caliphate (Nature of Islamic State, Form of Govt, Function of Islamic State, Caliphate Shura or the Consultative body and its role)</li> <li>• Institutional Development of the Muslim Civilisation (Umayyad, Abbasid, Crusade )</li> <li>• Muslim Freedom Movement in India (1857-1947)</li> <li>• Ideology of Pakistan</li> <li>• The Kashmir Issue</li> <li>• Pakistan and Neighbouring Countries</li> <li>• Research Methodology &amp; Philosophy of History</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b><u>For (K) Health &amp; Physical Education</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Philosophy of Physical Education,</li> <li>• Psychology of Physical Education,</li> <li>• Rules of games</li> <li>• Basics of Human Anatomy</li> <li>• Administrative and Management in Sports,</li> <li>• Sports Nutrition,</li> <li>• Trauma and Rehabilitation,</li> <li>• Research Methodology in Physical Education</li> <li>• Test, Measurement and Evaluation in Physical Education &amp; Sports</li> <li>• Sports Injuries,</li> <li>• Sports with physical disabilities</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <hr/> <p><b><u>For (L) Information Technology</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Data Communication &amp; Networking,</li> <li>• C/C++ Language,</li> <li>• Visual Basic,</li> <li>• Operating System Unix/Linux</li> <li>• Oracle/PLSQL,</li> <li>• System Analysis &amp; Design,</li> <li>• Computer Architecture,</li> <li>• Operating System concepts,</li> <li>• Software Engineering,</li> <li>• Security and Ethical issues</li> <li>• Data Structures,</li> <li>• Management Information System,</li> <li>• Web Programming,</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b>For (M) Islamic Studies</b></p> <p><b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b>Part-II (Masters Level)</b></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 ضابطہء حیات</p> <p><b>Part-III</b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b>For (N) Mathematics</b></p> <p><b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b>Part-II (Masters Level)</b></p> <ul style="list-style-type: none"> <li>• Calculus/Differentiation, Integration, Limits of continuity</li> <li>• Discrete Structures/Discrete Mathematics,</li> <li>• Communication Skills for Mathematicians,</li> <li>• Computing Tools for Mathematicians,</li> <li>• Mathematical Statistics,</li> <li>• Mathematical Spaces (Sets, Vector Spaces, Metric Spaces, topological spaces Tensors,</li> <li>• Differential Equations.</li> </ul>



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					<p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b><u>For (O) Pak Studies</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Ideology of Pakistan in light of speeches and statements of Allama Iqbal and Quaid-e-Azam</li> <li>• Pakistan Movement 1857-1947</li> <li>• Current Issues of Pakistan (challenges to National Security, Economic Challenges, Pakistan's War on Terror,</li> <li>• Geography of Pakistan <ul style="list-style-type: none"> <li>✓ Land and People of Pakistan</li> <li>✓ Pakistan and CPEC</li> <li>✓ Natural Resources of Pakistan,</li> </ul> </li> <li>• Latest Constitutional Amendments,</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b><u>For (P) Persian</u></b></p> <p><b><u>Part-I (10 Marks)</u></b> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><b><u>Part-II (Masters Level) (60 Marks)</u></b></p> <ul style="list-style-type: none"> <li>• Classical Persian Prose and Poetry</li> <li>• Modern Persian Literature,</li> <li>• History of Persian Language and Literature,</li> <li>• Study of Iranian History and Culture,</li> <li>• Iqbal's Persian Poetry and Thoughts.</li> </ul> <p><b><u>Part-III (30 Marks)</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology,</li> <li>• Classroom Management and Discipline,</li> <li>• Testing and Evaluation,</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

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

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					<p><b><u>For (S) Psychology</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Nature and Scope of Psychology</li> <li>• Developmental Psychology</li> <li>• Social Psychology</li> <li>• Educational Psychology</li> <li>• Counselling Psychology</li> <li>• Abnormal and Clinical Psychology</li> <li>• Organizational/Industrial Psychology</li> <li>• Forensic Psychology</li> <li>• Psychological Testing and Assessment</li> <li>• Research Methodology</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b><u>For (T) Public Administration</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Public Administration.-Its nature and scope,</li> <li>• Role of Public Administration in Welfare State</li> <li>• Bureaucracy.—Concept of Bureaucracy, Theories of Bureaucracy, Ecology of Bureaucracy; Bureaucracy of Pakistan as a Change Agent;</li> <li>• Administrative Leadership.—Approaches to the study of Leadership, Forms of Leadership, Leadership qualities;</li> <li>• Administrative Accountability</li> <li>• Planning.—Types, Process &amp; Principles</li> <li>• Planning Machinery; the system of planning and programming in Pakistan, Planning Machinery in Pakistan;</li> <li>• Problems of Coordination in Public Administration in Pakistan.</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b><u>For (U) Sociology</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Meaning, Characteristics and Elements of Culture</li> <li>• Society: Meaning and Characteristics</li> <li>• Social Contract Theory &amp; Organismic Theory</li> <li>• Sociological Theories (Ibn-i-Khaldun, Spencer, Max Weber, Karl Marx)</li> <li>• Methods of Sociological Research,</li> <li>• Social Institutions: Nature, Genesis &amp; Function</li> <li>• Mechanism of Social Control: Formal &amp; Informal</li> <li>• Social and Cultural Change &amp; Social Policy: Processes &amp; Effects</li> <li>• Community organization and development</li> <li>• Social Problems in Pakistan</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology,</li> <li>• Classroom Management and Discipline,</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>
					<p><b><u>For (V) Statistics</u></b></p> <p><b><u>Part-I</u></b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b><u>Part-II (Masters Level)</u></b></p> <ul style="list-style-type: none"> <li>• Measures of Central Tendency,</li> <li>• Measures of Dispersion or Variation,</li> <li>• Regression and Correlation,</li> <li>• Index Numbers,</li> <li>• Probability Theory,</li> <li>• Probability Distributions,</li> <li>• Presentation of Data</li> <li>• Time Series Analysis,</li> <li>• Statistical Inference,</li> <li>• Sampling Theory and Techniques,</li> <li>• Analysis of Variance,</li> <li>• Experimental Design</li> </ul> <p><b><u>Part-III</u></b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
					<p><b>For (W) Urdu</b></p> <p><b>Part-I (10 Marks)</b> Vocabulary, Grammar Usage, Sentence Structuring.</p> <p><b>Part-II (Masters Level) (60 Marks)</b></p> <ul style="list-style-type: none"> <li>• اردو ذبیحہ الفاظ</li> <li>• اردو جملے کا ڈھانچہ</li> <li>• اردو قواعد کا ایسہ عمال</li> <li>• لسانیات</li> <li>• عالیاتیات</li> <li>• اولیاتیات</li> <li>• سہ</li> <li>• بطور و مزاح</li> </ul> <p><b>Part-III (30 Marks)</b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul> <p><b>For (X) Zoology</b></p> <p><b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b>Part-II (Masters Level)</b></p> <ul style="list-style-type: none"> <li>• Eco System,</li> <li>• Classification of Fish, Reptiles, Mammals,</li> <li>• Classification of Mollusks, Edinodermata,</li> <li>• Theories of Evolution,</li> <li>• Mammalian Hormonal System,</li> <li>• Membrane System,</li> <li>• Mammalian Gametogenesis and Fertilization,</li> <li>• Multiple Alleles.</li> <li>• Mendelian laws of inheritance,</li> <li>• Reproduction and Development,</li> </ul> <p><b>Part-III</b></p> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology,</li> <li>• Classroom Management and Discipline,</li> <li>• Testing and Evaluation,</li> <li>• Knowledge of Bloom's Taxonomy</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
6.	168/2023	<b>Staff Nurse (BS-16)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	<p>i) Second Class or Grade 'C' Bachelor's degree in Nursing or equivalent qualification from a College/ University/ Institute recognized by Pakistan Nursing Council (PNC).</p> <p><b>OR</b></p> <p>Three (3) years diploma in general nursing or equivalent qualification from a College/ University/ Institute recognized by Pakistan Nursing Council (PNC) with One (1) year diploma in midwifery for Female/ One (1) years course in Nursing related field in lieu of midwifery for Male.</p> <p>ii) Valid registration with PNC.</p>	<p>Objective Type Test (MCQ)</p> <p><b>Part-I</b> English =20 marks</p> <p><b>Part-II</b> Professional Test=80 marks</p>	<p><b>Part-I</b> Grammar Usage, Sentence Structuring</p> <p><b>Part-II</b></p> <ul style="list-style-type: none"> <li>• Basic Medical Sciences</li> <li>• General Nursing</li> <li>• Ward Administration</li> <li>• Hospitality of the Patients</li> <li>• Care vs. Cure for Health Management</li> </ul>
7.	169/2023	<b>IT Supervisor (BS-16)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	<p>Second Class or Grade 'C' Bachelor's (4 years education) degree in Computer Science or Information Technology or Computer Engineering or Computer System Engineering or Software Engineering or equivalent qualification from a University recognized by the HEC.</p>	<p>Objective Type Test (MCQ)</p> <p><b>Part-I</b> English = 20 marks</p> <p><b>Part-II</b> Professional Test = 80 marks</p>	<p><b>Part-I</b> Grammar Usage, Sentence Structuring</p> <p><b>Part-II</b></p> <ul style="list-style-type: none"> <li>• Computer Hardware &amp; Software, ,</li> <li>• Data Communication &amp; Networking,</li> <li>• C/C++ Language,</li> <li>• Visual Basic,</li> <li>• Relational Database Management System (RDBMS),</li> <li>• Operating System Unix/Linux</li> <li>• Oracle/PLSQL,</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
8.	170/2023	<b>Ophthalmologist Assistant/Optomtrist (BS-16)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Second Class or Grade 'C' B.Sc. (honors) (4 years education) degree in Vision Sciences (Optometry) OR Second Class or Grade 'C' BS Optometry & Vision Sciences OR Second Class or Grade 'C' B.Sc. (Hons) (4 years education) in Optometry & Orthoptics or equivalent qualification from a University recognized by the HEC/PMC. OR i) Second Class or Grade 'C' B.Sc. from a University recognized by the HEC. ii) Diploma in dispensing of optometry from a recognized Institute/ University.	Objective Type Test (MCQ)  <b>Part-I</b>  English = 20 marks  <b>Part-II</b>  Professional Test=80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Instrumental Optics</li> <li>• Clinical Orthoptics (Ocular Motility and BSV)</li> <li>• Public Health and Community Optometry</li> <li>• Contact Lens</li> <li>• Clinical Optometry Procedure</li> <li>• Physical &amp; Geometric Optics</li> <li>• Basic Clinical Skills in Ocular Examination</li> <li>• Posterior Segment Eye Diseases</li> <li>• Clinical Refraction</li> </ul>
9.	171/2023	<b>Assistant Accounts Officer (BS-16)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Second Class or Grade 'C' Bachelor's degree in Commerce/ Business Administration or equivalent qualification from a University recognized by the HEC.	Objective Type Test (MCQ)  <b>Part-I</b>  English =20 marks  <b>Part-II</b>  Professional Test =80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Accounting Principles &amp; Procedures,</li> <li>• Journal, Ledger &amp; Cash Book,</li> <li>• Preparation of Annual Budget,</li> <li>• Heads of Accounts, Re-appropriation of Funds</li> <li>• Preparation of Pension Documents.</li> <li>• Financial Accounting</li> <li>• Financial Management</li> <li>• Cost Accounting</li> <li>• Business taxation</li> <li>• Public Procurement Rules, 2004</li> <li>• Basic IT/Computer Knowledge</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
10.	173/2023	<b>Nutritionist (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Second Class or Grade 'C' Bachelor's (4 years Education) degree in Food Science & Technology/ Food Science & Nutrition/ Human Nutrition & Dietetics or equivalent qualification from a University recognized by the HEC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Fundamentals of Food &amp; Nutrition</li> <li>• Principles of Diet Therapy.</li> <li>• Planning &amp; Preparation of Balanced Diet.</li> <li>• Physiological aspect of Nutrition</li> <li>• Energy Value of Foods</li> <li>• Sanitation and Hygiene</li> <li>• Regulation of food intake,</li> <li>• Nutritional requirements</li> <li>• Nutrition Health &amp; Prevention</li> </ul>
11.	174/2023	<b>Civil Medical Officer (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	(i) MBBS or equivalent qualification recognized by the PMC. (ii) Valid registration with PMC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Core courses of <b>MBBS</b> Degree Program.</li> <li>• Health Policies of the Government of Pakistan.</li> <li>• Care vs Cure for Health Management.</li> <li>• Major Challenges being faced by the Health Sector.</li> </ul>
12.	175/2023	<b>Civil Medical Officer (Dental Department) (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	i. BDS or equivalent qualification recognized by the PMC. ii. Valid registration with PMC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Core courses of <b>BDS</b> Degree Program.</li> <li>• Health Policies of the Government of Pakistan.</li> <li>• Care vs Cure for Health Management.</li> <li>• Major Challenges being faced by the Health Sector.</li> </ul>
13.	176/2023	<b>Doctor of Physical Therapy (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Doctor of Physical Therapy/ Second Class or Grade 'C' Bachelor's (4 years Education) degree in Physical Therapy or equivalent qualification from a University recognized by the HEC/PMC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Prosthetics &amp; Orthotics</li> <li>• Mayo Electric Upper Limbs</li> <li>• Internal Sockets Pressure Measurements</li> <li>• High Tech Prosthetic Designing</li> <li>• High Tech Sports Prosthetic</li> <li>• Hydraulic and Microprocessor Knees</li> <li>• Reciprocating Gait Orthosis</li> </ul>



S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
14.	177/2023	<b>Statistical Officer (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Second Class or Grade 'C' Master's degree in Statistics or equivalent qualification from a University recognized by the HEC.	Objective Type Test (MCQ)  <b>Part-I</b> English =20 marks  <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Time Series Analysis</li> <li>• Descriptive Statistics</li> <li>• Non Parametric Statistics</li> <li>• Regression &amp; Correlation</li> <li>• Statistical Hypothesis</li> <li>• Analysis of Variance</li> <li>• Sampling Techniques and analysis</li> <li>• Analysis of Clinical Data</li> </ul>
15.	178/2023	<b>Accounts Officer (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	Second Class or Grade 'C' Master's degree in Commerce/ Accounting & Finance/ MBA (Finance/ Accounting & Finance) or equivalent qualification from a University recognized by the HEC. OR Final Examination Certificate awarded by Institute of Cost & Management Accountants of Pakistan (ICMAP) or Institute of Chartered Accountants of Pakistan (ICAP)/ Membership of the Association of Chartered Certified Accountants (ACCA), UK.	Objective Type Test (MCQ)  <b>Part-I</b> English = 20 marks  <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Accounting Principles &amp; Procedures,</li> <li>• Scrutiny of Records for Audit Purposes</li> <li>• Journal, Ledger &amp; Cash Book,</li> <li>• Preparation of Annual Budget,</li> <li>• Financial Planning and Cost Accounting</li> <li>• Heads of Accounts, Re-appropriation of Funds and Supplementary Grants</li> <li>• Settlement of Audit Objections.</li> <li>• Public Procurement Rules, 2004</li> <li>• Basic Mathematics (Average, Ratio etc.)</li> <li>• Basic IT Knowledge</li> </ul>
16.	179/2023	<b>Excise &amp; Taxation Officer (BS-17)</b> , Excise & Taxation, (Zakat & Ushr), Narcotics Control and Cooperatives Department Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.	Second Class or Grade "C" Master's degree in Economics/ Statistics/ Mathematics/ M.Com. or equivalent qualification from a University recognized by the HEC.	Objective Type Test (MCQ)  <b>Part-I</b> English =20 marks  <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Public Administration</li> <li>• Principles of Management</li> <li>• Human Resource Management</li> <li>• Financial Management</li> <li>• Basic Mathematics (Average, Ratio etc.)</li> <li>• Public Procurement Rules, 2004</li> <li>• Basic IT Knowledge</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
17.	181/2023	<b>Social Case Worker (BS-17)</b> , Directorate General of Special Education, Ministry of Human Rights.	Second Class or Grade 'C' Master's degree or equivalent qualification in Special Education or Social Work or Sociology or Anthropology.	Objective Type Test (MCQ)  <b>Part-I</b>  English = 20 marks  <b>Part-II</b>  Professional Test= 80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Community Organization and Development,</li> <li>• Social Research &amp; Statistics,</li> <li>• Organizational Behaviour and Human Resources,</li> <li>• Social Welfare Policy and Administration,</li> <li>• Methods of Counselling &amp; Guidance Services</li> <li>• Environmental Sociology</li> <li>• Health Policy of the Government</li> <li>• Basic concepts in Sociology and Criminology</li> </ul>
18.	182/2023	<b>Assistant Network Administrator (BS-16)</b> , Ministry of Law and Justice.	Second Class or Grade "C" Bachelor's degree in Computer Science/ Information Technology or equivalent qualification from a University recognized by the HEC.	Objective Type Test (MCQ)  <b>Part-I</b>  English = 20 marks  <b>Part-II</b>  Professional Test=80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Types of networks (LAN/WAN, Internet, Intranet)</li> <li>• Network Topologies,</li> <li>• Network Management</li> <li>• Communication Protocols</li> <li>• OSI model</li> <li>• Operating Systems (Windows, Linux)</li> <li>• Transmission Mediums, Direction and Modes</li> <li>• Network Devices (Switch, Routers, etc),</li> <li>• Network security issues (Viruses, Firewall and unauthorized access),</li> </ul>
19.	183/2023	<b>Junior Executive/ Proof Reader (BS-16)</b> , Ministry of Law and Justice.	Second Class or Grade "C" LLB or equivalent qualification form a University recognized by the HEC.	Objective Type Test (MCQ)  <b>Part-I</b> English = 20 marks  <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Core courses of <b>L.LB.</b> Degree Program.</li> <li>• Process of filing cases in the Courts.</li> </ul>
20.	184/2023	<b>Pharmacist (D Pharmacy) (BS-17)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.	D Pharmacy from a University recognized by Pharmacy Council of Pakistan and HEC.	Objective Type Test (MCQ)  <b>Part-I</b>  English = 20 marks  <b>Part-II</b>  Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Physical Pharmacy,</li> <li>• Clinical Pharmacy,</li> <li>• Hospital Pharmacy,</li> <li>• Pharmaceutical Biochemistry,</li> <li>• Pharmaceutical Microbiology,</li> <li>• Pharmaceutical Quality Control &amp; Quality Management</li> <li>• Application of Computer in Pharmacy.</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
21.	185/2023	<b>Junior Librarian (BS-16)</b> , Department of Libraries, Ministry of Interior.	Second class or Grade 'C' Master's degree in Library Science or equivalent qualification from a University recognized by HEC. <b>OR</b> i) Second Class or Grade 'C' Bachelor's degree in Library Science or equivalent qualification from a University recognized by HEC ii) Two (2) years post qualification experience in the relevant field.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Introduction to Library &amp; Information Science</li> <li>• Information Sources and Services</li> <li>• Classification: Theory and Practice</li> <li>• Cataloguing: Theory and Practice</li> <li>• Collection, maintenance and issuance of library books.</li> <li>• Library Automation/Information Storage &amp; Retrieval</li> <li>• IT based Library Management</li> <li>• Research Methods &amp; Techniques for Librarians</li> <li>• Public Records, Rare Material &amp; their Conservation</li> <li>• Management of Serials Publications</li> <li>• Rules &amp; Procedure for Write off of library material</li> </ul>
22.	187/2023	<b>Administrative Officer (BS-17)</b> , Pakistan Meteorological Department, Ministry of Aviation.	i. Second Class or Grade 'C' Master's Degree from a University recognized by the HEC. ii. Two (2) years post qualification experience in Admin./ Establishment/ Recruitment of Personnel/ Budget & Accounts.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Human Resource Management</li> <li>• Civil Servants Act, 1973 and Rules made thereunder</li> <li>• Rules of Business, 1973</li> <li>• System of Financial Control and Budgeting</li> <li>• Public Procurement Rules, 2004</li> <li>• Basic Arithmetic &amp; Computer/IT.</li> </ul>
23.	188/2023	<b>Inspector (BS-16)</b> , Airports Security Force, Ministry of Aviation.	Bachelor's Degree.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> General Intelligence/ Professional Test = 80 marks	<b>Part-I</b> Grammar Usage, Sentence Structuring. <b>Part-II</b> <ul style="list-style-type: none"> <li>▪ Basic Arithmetic <ul style="list-style-type: none"> <li>• Algebra</li> <li>• Ratios</li> <li>• Percentages</li> <li>• Arithmetic Means</li> </ul> </li> <li>▪ Current Affairs. <ul style="list-style-type: none"> <li>• Developments at National and International Levels in the last 5 years</li> </ul> </li> <li>▪ Pakistan Affairs &amp; Islamic Studies <ul style="list-style-type: none"> <li>• Basic Level knowledge</li> </ul> </li> <li>▪ Basic Knowledge of ASF Act – 1975</li> </ul> <p>Note : <b>(Equal weightage for each topic at Part-II)</b></p>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
24.	189/2023	<b>Medical Officer (BS-17)</b> , Medical Department of Pakistan Railways (Railway Board), Ministry of Railways.	MBBS or equivalent qualifications recognized by PM&DC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> • Core courses of <b>MBBS</b> Degree Program. • Health Policies of the Government of Pakistan. • Care vs Cure for Health Management. • Major Challenges being faced by the Health Sector in Pakistan.
25.	190/2023	<b>Psychiatrist (BS-17)</b> , Anti-Narcotics Force, Ministry of Narcotics Control.	i. MBBS or equivalent qualification recognized by PMDC. ii. Registration with PMDC. iii. Three (3) years post qualification experience in psychiatry field.	Objective Type Test (MCQ) <b>Part-I</b> English =20 marks <b>Part-II</b> Professional Test =80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> • Core courses of <b>MBBS</b> degree program. • Diagnose and remedy in the following disorders: i. Mood disorders. ii. Anxiety disorders. iii. Schizophrenia.
26.	193/2023	<b>National Savings Officer (BS-17)</b> , Central Directorate of National Savings, Ministry of Finance.	Second Class or Grade 'C' Master's Degree in Economics/ Statistics/ Commerce/ Accounting / Finance/ Business Administration/ Public Administration/ Cost and Management Accountant/ Chartered Accountant/ Administrative Sciences/ Management Sciences or equivalent qualification from University recognized by HEC .	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> • Functions of National Savings Organization • Basic Accounting • Basic Auditing • Basic Public Finance • Basic Arithmetic • Basic I.T. Knowledge
27.	195/2023	<b>Veterinary Officer (BS-17)</b> , Remount Veterinary & Farms Directorate, GHQ, Ministry of Defence.	Veterinary Graduate. (Registration with Pakistan Veterinary Medical Council).	Objective Type Test (MCQ) <b>Part-I</b> English =20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> • Veterinary Pathology, • Veterinary Parasitology, • Veterinary Microbiology, • Animal Nutrition, • Animal Breeding & Genetics, • Livestock Management, • Poultry Husbandry, • Animal Reproduction, • Infectious Diseases of Bovines & Poultry.

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
28.	197/2023	<b>Civilian Medical Practitioner (CMP) (Grade-III) (BS-17)</b> , Ordnance Corps, OS Directorate, GHQ, Ministry of Defence.	MBBS or equivalent qualification recognized by the PMDC.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>Core courses of <b>MBBS</b> Degree Program.</li> <li>Health Policies of the Government of Pakistan.</li> <li>Care vs Cure for Health Management.</li> <li>Major Challenges being faced by the Health Sector in Pakistan.</li> </ul>
29.	199/2023	<b>Research Officer/ Planning Officer/ Survey Officer (BS-17)</b> , Economists Group, Ministry of Planning, Development and Special Initiatives.	First Class or Grade "B" Master's degree in Economics or equivalent qualification in Economics from recognized University with no 3 <sup>rd</sup> Division in entire academic career.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>Qualitative and Quantitative Research Method</li> <li>Empirical and Analytical Analysis Techniques</li> <li>Collection and Compilation of Data for Economic Research</li> <li>Pakistan's Economic Development Planning Process</li> <li>Economic Development Planning: Typology Tools and Techniques</li> <li>Bilateral Economic relationship of Pakistan with USA, China and European Union.</li> <li>Importance of CPEC in Economic Growth of Pakistan.</li> </ul>
30.	200/2023	<b>Assistant Controller of Stores/ Purchase (BS-17)</b> , Stores & Purchase Department of Pakistan Railways, Ministry of Railways.	B.Sc. Engineering in Civil/ Electrical/ Electronics/ Telecommunication/ Mechanical Engineering. Registration with PEC required.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>Basic Arithmetic (Algebra, Ratios, Percentages, Arithmetic Means)</li> <li>General Science</li> <li>Basic concepts in inventory management</li> <li>IT based inventory management</li> <li>Procedures of Receipt and Issue of Stores</li> <li>Stores procedures with relation to following topics:- <ul style="list-style-type: none"> <li>a. Stock Taking</li> <li>b. Care and preservation of Railway Equipments and Stores</li> <li>c. Ware House Management</li> </ul> </li> <li>Public Procurement (PPRA) Rules, 2004</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
31.	201/2023	<b>Assistant Executive Engineer (BS-17)</b> , Civil Engineering Department of Pakistan Railways (Railway Board), Ministry of Railways.	i. Bachelor's degree in Civil Engineering OR equivalent qualification. ii. Registration with PEC required.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test = 80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Soil Mechanics &amp; Foundation Engineering</li> <li>• Surveying &amp; Levelling</li> <li>• Costing and Estimation</li> <li>• Construction Management</li> <li>• Building Material &amp; Building Construction</li> <li>• Structural Design Applications</li> <li>• Concrete Technology &amp; R.C.C Structure Design</li> <li>• Preparation of PC-1 for Infrastructure Projects</li> <li>• Project Management &amp; Supervision.</li> <li>• Basic IT/Computer Knowledge</li> </ul>
32.	202/2023	<b>Occupational Therapist (BS-17)</b> , Directorate General of Special Education, Ministry of Human Rights.	Second Class or Grade 'C' Bachelor's degree in Occupational Therapy with three years post qualification experience in the relevant field.	Objective Type Test (MCQ) <b>Part-I</b> English = 20 marks <b>Part-II</b> Professional Test=80 marks	<b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>• Concept of Occupational Therapy and its functions</li> <li>• Common Neurological Disorders</li> <li>• Role of Occupational Therapy while dealing with the patient with Neurological Conditions</li> <li>• Adopted devices and their functions</li> <li>• Role of Occupational Therapy in Rehabilitation of Cerebral Palsied Children</li> <li>• Role of Occupational Therapy in Activities of Daily Living</li> <li>• Occupational Therapy as Supportive Measures</li> <li>• Occupational Therapy for Blind and Visually Impaired</li> <li>• Occupational Therapy in Geriatrics</li> <li>• Occupational Therapy for Children and Adolescents with Psychological Disorders.</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
33.	203/2023	<p><b>Assistant Manager IT (BS-17),</b> Federal Government Organization.</p> <p><b>NOTE:</b> To short list the candidates at first stage MCQs Screening Test shall be held. Thereafter subjective type IT Proficiency test of 100 marks will be conducted for shortlisted candidates at the ratio of 1:8 (eight candidates per post) with qualifying standard of 50% marks.</p>	<p>i. Second Class or Grade 'C' Master's degree or equivalent in Computer Science. OR Second Class or Grade 'C' Bachelor's degree in Software Engineering or System Engineering/Computer Engineering.</p> <p>ii. Certification in MTA (Microsoft Technology Associate) OR CCNA (CISCO Certified Network Associate) OR RHCSA (Red Hat Certified System Administrator) OR The officer will be required to qualify certification in either of the above during probation period.</p>	<p>Objective Type Test (MCQ)</p> <p><b>Part-I</b> English = 20 marks</p> <p><b>Part-II</b> Professional Test = 80 marks</p>	<p><b>Part-I</b> Vocabulary, Grammar Usage, Sentence Structuring</p> <p><b>Part-II</b></p> <ul style="list-style-type: none"> <li>• Computer Hardware &amp; Software, ,</li> <li>• Data Communication &amp; Networking,</li> <li>• C/C++ Language,</li> <li>• Visual Basic,</li> <li>• Relational Database Management System (RDBMS),</li> <li>• Operating System Unix/Linux</li> <li>• Oracle/PLSQL,</li> </ul> <p><b>Note:</b> For Pre-selected candidate, syllabus for Descriptive Test is at Page-24 below</p>

## SUBJECTIVE TYPE IT PROFICIENCY TEST

Max Marks: 100

Qualifying Standard 50%

Time Allowed: 3 Hours

Case No.	F.4-203/2023-R
Particulars of post	<b>Assistant Manager IT (BS-17) Federal Government Organization.</b>
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's degree or equivalent in Computer Science. OR Second Class or Grade 'C' Bachelor's degree in Software Engineering or System Engineering/ Computer Engineering.</p> <p>ii. Certification in MTA (Microsoft Technology Associate) OR CCNA (CISCO Certified Network Associate) OR RHCSA (Red Hat Certified System Administrator) OR The officer will be required to qualify certification in either of the above during probation period.</p>

### I. Introduction to Computing

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

### II. Computer Communications & Networks

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

### III. Database Systems

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



#### IV. Operating Systems & Web

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

#### SUGGESTED READINGS

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

**Schemes and Syllabi for Written Examination (Descriptive) for Posts in BS-20 advertised under Consolidated Advertisement No. 08/2023**

i)	Case No.	F.4-160/2023-R
	Particulars of post	<b>Chief (BS-20)</b> , Agriculture Policy Institute, Ministry of National Food Security & Research.
	Minimum Qualification & Experience:	i. Ph.D. in Agriculture Economics/ Economics from a University recognized by the HEC. ii. Thirteen (13) years post qualification experience of Agriculture Policy Planning and Analysis. <b>OR</b> i. M. Phil in Agriculture Economics/ Economics from a University recognized by the HEC. ii. Fifteen (15) years post qualification experience of Agriculture Policy Planning and Analysis. <b>OR</b> i. Second Class or Grade 'C' Master's degree in Agriculture Economics/ Economics or equivalent qualification from a University recognized by the HEC. ii. Seventeen (17) years post qualification experience of Agriculture Policy Planning and Analysis.
ii)	Case No.	F.4-186/2023-R
	Particulars of post	<b>Director General (Chief Librarian) (BS-20)</b> , National Library of Pakistan (NLP), National Heritage and Culture Division.
	Minimum Qualification & Experience:	i. Second class or Grade 'C' Master's degree in Library Science or Library and Information Science or equivalent qualification from a University recognized by HEC. ii. Seventeen (17) years post qualification experience in the relevant field.

**PAPER: PROFESSIONAL (100 MARKS)**

**Analysis Paper:** Candidates will be required to analyse a situation related to advertised post and suggest/draw suitable solution comprising approximately **1000 words**. Candidate's research based knowledge as well as articulation, expression and technical treatment of the situation will be examined.

**OR**

**Case Study:** Candidates will be given real situation case studies related to advertised posts/ organization concerned and will be expected from the candidates to present (i) identification of issues (ii) evaluation of issues (iii) case related theories (iv) evaluation of case facts if required and (v) possible solution of the case, if the case so requires.

**Schemes and Syllabi for Written Examination (Descriptive)  
for All Posts in BS-18 & BS-19 included in Consolidated  
Advertisement No. 08/2023 & 09/2023**

**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.4-152/2023-R
Particulars of post	<b>General Staff Officer, Grade-I (Classified Radiologist) (BS-19)</b> , Diagnostic Radiology Department, Armed Forces Institute of Radiology And Imaging, Ministry Of Defence.
Minimum Qualification & Experience	<ul style="list-style-type: none"> <li>i. MBBS or equivalent qualification from a University recognized by PM&amp;DC.</li> <li>ii. FCPS (Radiology) or equivalent qualification recognized/ registered by the PM&amp;DC.</li> <li>iii. Seven (7) years post qualification working experience at any renowned medical imaging setup.</li> </ul>

**Part-I: 25 Marks (MCQ)**

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

**Part-II: (Qualification Based) (Descriptive) 25 Marks**Core courses of **MBBS Degree****Part-III: (Professional) (Descriptive) 50 Marks**Core courses of **FCPS (Radiology)**.

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

Case No.	F.4-153(A)/2023-R
Particulars of post	<b>Assistant Professor (Female) (Health &amp; Physical Education)</b> (BS-18), Directorate of Federal Government Educational Institutions (Cantt/Garrison) Colleges, Ministry of Defence.
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M. Phil Degree in the relevant subject with three (3) years post-qualification teaching experience at College/ University level. <b>OR</b> 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****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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
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.4-153(B)/2023-R
Particulars of post	<b>Assistant Professor (Female) (History)</b> (BS-18), Directorate of Federal Government Educational Institutions (Cantt/Garrison) Colleges, Ministry of Defence.
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M. Phil Degree in the relevant subject with three (3) years post-qualification teaching experience at College/ University level. <b>OR</b> 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: (History) (Subjective) 50 Marks**

- I. Muslim Rule and Heritage in India (712-1857):** Political History Arrival, foundation and consolidation of Muslim rule in India, important rulers of the Slave Dynasty and the Mughals. The Spirit and legacy of Muslim civilization, Art, Architecture and literature, Public Administration under Muslim Rules. Sultans, Kings, Economic, Social, Judicial, Civil and Military system during the Muslim rule, Industry, trade and commerce under the Muslim patronage, Financial Administration.
- II. British Rule in India: 1857-1947:** British Imperialism, origin and growth of the East India Company, Causes and effects of downfall of the Mughal Empire in India, War of Independence in 1857: Causes and effects.
- III. Muslim Struggle for Independence:** Role of Shah Wali Ullah, Syed Ahmad Shaheed and Sir Syed Ahmed Khan towards regeneration of the Muslim of South Asia, All India Muslim League, Partition of Bengal, Simla Deputation, Lucknow pact; Khilafat movement. Nahru Report, Quaid-i- Azam's Fourteen Points.
- IV. Pakistan Movement:** Allama Iqbal's Allahabad Address 1930, and Round Table Conference. The Congress Rule in the provinces-1937-1939, Lahore Resolution 1940, various Missions and Plans for the partition of the South Asia. Founders of Pakistan: Quaid-i-Azam, Mohsin-ul-Mulk, Syed Amir Ali, Ali Brothers. Sir Agha Khan, Ch. Khaliq uz Zaman, Chaudhry Rahmat Ali, etc.
- V. Separation of East Pakistan:** Causes and Effects.
- VI. Working of Democracy in Pakistan:** Liaquat Ali Khan to Firoz Khan Noon (1947-1958), Zulfikar Ali Bhutto's Period,(1971-1977),Benazir, Nawaz Sharif, Revival of Democracy: 1988-1999, Restoration of Democracy (2008 to date), Role of Major Political Parties and Pressure Groups in the history of 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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	India's Struggle for Independence	Chandre Bipin, 1989
2.	Wavell and the Days of the Raj: Britain's Penultimate Viceroy in India,	Chawla, Muhammad Iqbal, 2011
3.	The Charismatic Leader: Jinnah and the Creation of Pakistan	Hayat, Sikandar, 2007
4.	Muslim Civilization of Indo-Pakistan.	Ikram, Shaikh Muhammad, 1966
5.	Constitutional and Political History of Pakistan	Khan, Hamid, 2005
6.	The Military and Politics in Pakistan 1947-86	Rizvi Hassan Askari
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.4-153 (C)/2023-R
Particulars of post	<b>Assistant Professor (Female) (Islamiyat)</b> (BS-18), Directorate of Federal Government Educational Institutions (Cantt/Garrison) Colleges, Ministry of Defence.
Minimum Qualification & Experience:	Ph.D. Degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M. Phil Degree in the relevant subject with three (3) years post-qualification teaching experience at College/ University level. <b>OR</b> 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: (Islamic Studies) (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 Mohammad (PBAH) as:

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

**III. Islamic Civilization and Culture:**

- Meanings and the vital elements of Islamic Civilization and Culture
- Role of civilisation in the development of the human personality and communities
- Distinctions of Islamic Civilization;
  - Tauheed
  - Risalat
  - 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.
- 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
- مبلغ
- سفارت کار
- معلم انسانیت
- انقلابی رہنما

### III اسلامی تہذیب و ثقافت

- اسلامی تہذیب و ثقافت کے معانی اور اہم اجزا

- ساج 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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
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.	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.4-155/2023-R
Particulars of post	<b>2<sup>ND</sup> Engineer (Electronics) (System Engineer PCBRF) (BS-18)</b> , Naval Headquarters, Ministry of Defence.
Minimum Qualification & Experience	(i) Bachelor of Engineering in Electrical/ Electronics/ Computer or equivalent from the recognized University. (ii) Five (5) years post qualification experience in Govt./ Semi-Govt./ or a firm of repute in repairs of the multi-layer Printed Circuit Board/ use of Specialized Diagnostic Test Equipment/ handling of Programmable ICs.

**Part-I: (MCQ) 25 Marks**

- 25 MCQ Questions on Part-II.

**Part-II: (Engineering) (Subjective) 75 Marks****I. Electricity & Electronics:**

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

**II. Electrical Machines:**

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

AC Motors: Induction motor, Synchronous motor, Performance, Efficiency. Single phase and three phase Motors.

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

**III. Electronics:**

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

Amplifier & Oscillators: Working and classification of amplifiers, Class A and Class B Amplifiers, Feedback Amplifiers, Types of Feedback, RC Oscillators.

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

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

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

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

**IV. Power Systems:**

Power network analysis, Polyphase circuits, Transients, Transmission Lines, Losses.

**V. Costing, Accounting and Budgeting:**

Net present value, Net future value, cash flows, auditing, income statement, balance sheet, taxation, financial risk management, cost analysis.

**VI. Project Management:**

Time lines, milestones, resources allocation, dependency, Gant Charts,

**VII. Inventory Management:**

FIFO models, LIFI models, Identification Schemes, Inventory management systems.

**VIII. Quality Management Systems:**

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

**SUGGESTED READINGS**

S. No.	Title	Author
1.	Electrical Technology	B.L. Tharaja
2.	Electronic Devices and Circuits.	Bogart
3.	DC Machines	P.C. Sen
4.	Semiconductors	Manzar Saeed
5.	Modern Digital and Analog Communication	B.P.Lathi
6.	Computers, tools for an Information age,	H.L. Captron, Addison Wesley
7.	Handbook of Engineering Management	Dennis Lock.
8.	Total Quality Management	Dale H. Besterfield, Carol Besterfield-Michna, Glen H. Besterfield, Mary Gesterfield-Sacre

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

Case No.	F.4-157/2023-R
Particulars of post	<b>General Staff Officer, Grade-I (Classified Radiologist) (BS-19)</b> , PET CT Scan Department, Armed Forces Institute of Radiology and Imaging, Ministry of Defence.
Minimum Qualification & Experience	<ul style="list-style-type: none"> <li>i. MBBS or equivalent qualification from a University recognized by PM&amp;DC.</li> <li>ii. FCPS (Radiology) or equivalent qualification recognized/ registered by the PM&amp;DC.</li> <li>iii. One (1) year Fellowship degree/ OJT in PET CT.</li> <li>iv. Seven (7) years post qualification working experience at any renowned medical imaging setup</li> </ul>

**Part-I: 25 Marks (MCQ)**

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

**Part-II: (Qualification Based) (Descriptive) 25 Marks**Core courses of **MBBS Degree****Part-III: (Professional) (Descriptive) 50 Marks**

- i. Core courses of FCPS in **Radiology**.
- ii. Core Courses of Specialization in **PET CT**.

**Note: (Equal weightage for each topic at Part-III)**

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

Case No.	F.4-158/2023-R
Particulars of post	<b>Social Mobilizer (BS-18)</b> , Office of Chief Engineering Adviser/ Chairman Federal Flood Commission, Ministry of Water Resources.
Minimum Qualification & Experience	(i) Second Class or Grade 'C' Master's degree in Sociology /Social Work from a recognized University. (ii) Five (05) years post qualification experience in the field of community mobilization in the rural areas.

**Part-I: (MCQ) 25 Marks**

- 25 MCQ Questions on Part-II.

**Part-II: (Qualification Based) (Descriptive) 75 Marks**

- I. **Society:** Meaning and characteristics. Community; meaning and characteristics. Individual and society. Relationship between individual and society. Two main theories regarding the relationship of man and society (i) the social contact theory and (ii) the organismic theory. Social and cultural evolution of society.
- II. **Social and Cultural Change and Social Policy:** Processes of Social and Cultural Change-discovery, Inhibitions to social and cultural change in Pakistan, Social planning and directed social and cultural change, Effect of Industrialization, Urbanization, Modernization and Modern Means of Communication on Social Change.
- III. **Community:** The rural community, Traditional Characteristics of rural life, The urban community, Rural – Urban convergence, Urbanism, Future of cities in Pakistan.
- IV. **Social Institutions:** The nature and genesis of institutions, The process of institutionalization, Functions of Social Institutions: Family, Religion, Education, Economy and Politics.
- V. **Sociological Theory:** Three sociological perspectives: Structural Functionalism, Symbolic interactions and Conflict. Theorists: Ibn-i-Khaldun, Spencer, August Comte, Emile Durkheim, Max Weber, Karl Marx, Parson.
- VI. **Methods of Sociological Research:** Scientific Method, Steps in research, Types of Questionnaire Research Design, Surveys, Observation and Case Studies.
- VII. **Social Problems in Pakistan and their nexus of various forms of social empowerment with economics empowerment/uplift:** High population growth rate, Rural –urban migration. Issues of technical/vocational training, Deviance and street crime, Unemployment, illiteracy and School dropout, Smuggling, Prostitution, Poverty, Drug Addiction, Child Labour and Abuse, Bonded Labour, Social customs and Traditions affecting Women in Pakistan, Violence Against Women and Domestic Violence, Issues concerning the Elderly in Pakistan.
- VIII. **Successful efforts of social mobilization in Pakistan and around the world and currently prevalent best practices, with emphasis on disaster management**
- IX. **Human Growth and Personality Development:** Meaning and significance of human growth, Basic assumptions of human behaviour, Approaches to the study of human development, Principles of human development, Factors influence human growth/development, Phases of human development Levels of functioning of human mind and behaviour perspectives, Components of human personality, Theories of



personality development, Concepts of abnormal behaviour, Role of Nature & Nurture in Personality Development

**X. Use of Information Technology for social mobilization, particularly for disaster management**

**SUGGESTED READINGS**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	Sociology : A down to earth approach	James M. Henslin
2.	Methods of Social Research	Baily
3.	Master of Sociological Thought	Lewis A.Coser
4.	Feudal System in Pakistan	Nawab Haider Naqvi
5.	The Sociology of Rural Life	Lynn Smith, T.
6.	Sociology-Social Structure and Social Conflict	Kerbo, Harold R. (1989).
7.	An Introduction to the History of Sociology	Barnes, H.E. (Ed.) (1966)
8.	Pakistani Society	Akbar Ahmad, S.

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

Case No.	F.4-159/2023-R
Particulars of post	<b>Deputy Chief</b> (BS-19), Agriculture Policy Institute, Ministry of National Food Security & Research.
Minimum Qualification & Experience	<p>i. Ph.D. in Agriculture Economics/ Economics from a University recognized by the HEC.</p> <p>ii. Eight (8) years post qualification experience of Agriculture Policy Planning and Analysis.</p> <p style="text-align: center;"><b>OR</b></p> <p>i. M.Phil. in Agriculture Economics/ Economics from a University recognized by the HEC</p> <p>ii. Ten (10) years post qualification experience of Agriculture Policy Planning and Analysis.</p> <p style="text-align: center;"><b>OR</b></p> <p>i. Second Class or Grade 'C' Master's degree in Agriculture Economics/ Economics or equivalent qualification from a University recognized by the HEC.</p> <p>ii. Twelve (12) years post qualification experience of Agriculture Policy Planning and Analysis.</p>

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II.

**Part-II (Professional): 75 Marks (Descriptive)**

- I. Challenges in Pakistan's Agriculture:** Analytical overview: issues and strategies for improvement of crop management, livestock management, fisheries, resource management and rural development. Efficacy and strengthening of the R & D eco-system in Agriculture. Issues in Agricultural Extension. Issues in Post-harvest management of Agriculture Product.
- II. Elements of Climate and Relationship with Crop Growth:** Farming Systems, biological nitrogen fixation, soil profile, structure and texture, soil fertility, soil erosion and conservation, water logging and salinity
- III. Agricultural Economics:** Definition, nature and scope of agricultural economics; Agriculture as an industry, its peculiarities & role in national economy; Organization and structure of the agricultural Sector; Factors of production and their rewards; Theory of Production; Laws of return, and its significance in agriculture; Land utilization and land use policy;
- IV. Agricultural Marketing:** Basic concepts and principles of Agricultural Marketing and its role in Agricultural development; Marketing Infrastructure, Marketing Approaches and problems; Standardization and grading, Storage, transportation, and management. Marketing margins and profitability; market functionaries, marketing channels, price variation and stabilization; Review of agricultural marketing systems in Pakistan. Current Legislation; emerging trends in regulation of agri-markets; empowering the farmers through ICT.

- V. Nutrition:** Ecological problems of food resource production, resources and quality of foods, solutions in food insecurity, sustainable agriculture and food systems, international programmes for improving malnutrition situation. Statistics on Nutrition in Pakistan.
- VI. Agricultural Policies (Provinces):** Agricultural policies of the provinces of Pakistan, Existing legislation and modern trends, Agri-Taxation and subsidies, trade policies for agricultural commodities, rural development policies.
- VII. National Food Security Policy.**

### SUGGESTED READINGS

S. No.	Titles	Author
1.	Agriculture in Pakistan	Khan M. H.
2.	Manual of Plant Production	Abdul Manan.
3.	Principles of Field Crop Production	Martin., J.H. & Leonard, W.H.
4.	Diseases of Field Crops	Dickson, J.G
5.	Irrigation Principles & Practices	Isrealson, O.W. Vaughn, E. Hansen
6.	The Principles of Agronomy.	Harris, Franklin Stewart
7.	Food, Agriculture and Nutrition,	FAO. 1997. Italy
8.	Introduction to Agricultural Economics.	Penson, J. B., Capps, O. Rossen C. P. & Woodward, R.
9.	Principle of Marketing	Kotler, P. and Armstrong, G.
10.	Agricultural Policies in Developing Countries	Ellise, F.
11.	Agricultural Policy Manual: A discussion of Agricultural Policies for Development	Eckert, J. B.
12.	National Food Security Policy	Govt. of Pakistan <a href="http://www.mnfsr.gov.pk">www.mnfsr.gov.pk</a>

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

Case No.	F.4-161/2023-R
Particulars of post	<b>Deputy Director (Horticulture) (BS-18)</b> , PAK. P.W.D, Ministry of Housing and Works.
Minimum Qualification & Experience	i. Second Class Grade 'C'; Master's degree in Agriculture. ii. B.Sc. (Hons) degree in Agriculture with Horticulture as major subject. iii. 05 years post qualification experience in the field of Horticulture/ Agriculture.

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II.

**Part-II (Professional): 75 Marks (Subjective)****I. Introductory Horticulture**

Introduction, history, importance and future scope, Definition and divisions of horticulture, Classification of horticultural crops, Plant parts, their modifications and functions, Plant environment; climate (temperature, light, humidity etc) and soil (structure, texture, fertility etc), Phases of plant growth, Propagation of horticultural plants.

**II. Horticultural Crop Production**

Establishment of orchards, vegetable farms and ornamental gardens; site selection, layout methods, wind breaks and their role. Management practices; irrigation, manures and fertilizers, training and pruning, cultivation and weed control. Climate, soil, propagation, rootstocks, cultivars, important pests, harvesting, post-harvest handling and marketing of important horticultural crops (fruits, vegetables and ornamentals) of the region.

**III. Landscape Horticulture**

Classification of landscape plants, Growth habits, foliage and flowering effects, Propagation and maintenance of important landscape plants and turf grasses Introduction to landscape design, hardscape and softscape, Principles, elements and types of landscape, Suitability of various plants for different purposes and locations, Irrigation systems for different landscapes, Landscape planning, installation, maintenance, and budget estimation.

**SUGGESTED READINGS**

S. No.	Title	Author
1.	Handbook of Horticulture	Chadha, K.L.
2.	Introductory Horticulture.	Christopher, E. P.
3.	Horticulture: Principles and Practices	Acquaah, G.
4.	Principles of Horticulture	Adams, C. R., K.M. Bamford and M. P. Early
5.	Horticulture,	Malik, M.N. National Book Foundation, Islamabad.
6.	Introductory Ornamental Horticulture	Arora, J.S.
7.	Introduction to Landscaping Design, Construction and Maintenance	Biondo, R.J., and C.B. Schroeder

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

Case No.	F.4-162/2023-R
Particulars of post	<b>Principal/ Vice Principal/Headmaster</b> (BS-19 Plus 25% Special Pay), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's degree with B.Ed. (Hons)/ B.Ed./ M.Ed. or equivalent qualification from a university recognized by the HEC.</p> <p>ii. Twelve (12) years post qualification teaching experience including at least 3 ½ years of administrative experience in recognized educational Institutions.</p>

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II & III.

**Part-II: 50 Marks (Descriptive)**

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

**I. Human Resource and Financial Management**

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

**II. Basic Concept of Quality Management**

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

**III. Information Technology and MS Office**

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

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

- Elements of Curriculum.

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

## II. Process of Teaching and Teaching Strategies

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

## III. Educational Assessment and Evaluation

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

## IV. Research Methods in Education

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

### SUGGESTED READINGS

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

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

Case No.	F.4-164/2023-R
Particulars of post	<b>Rehabilitation Specialist</b> (BS-18), National Institute of Rehabilitation Medicine, Islamabad, Ministry of National Health Services, Regulations & Coordination.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> <li>i. MBBS or equivalent qualification recognized by PM&amp;DC</li> <li>ii. PM&amp;DC level III qualification in Rehabilitation Medicine recognized by PM&amp;DC.</li> <li>iii. Two (2) years post qualification experience in the relevant field.</li> </ul>

**Part-I: (MCQ)****25 Marks**

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

**Part-II: (Qualification Based) (Descriptive)****50 Marks**Core courses of **MBBS Degree****Part-III: (Professional) (Descriptive)****25 Marks**Core courses of Level III qualification in **Rehabilitation Medicine**.

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

Case No.	F.4- 165/2023-R
Particulars of post	<b>Head of Department (Commerce)</b> (Female) (BS-18), Government Polytechnic Institute for Women, Ministry of Federal Education & Professional Training
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's degree in Commerce or an equivalent qualification from a recognized University. ii. Five (5) years post qualification teaching experience in the field of Commerce in BS-16 and above or equivalent in Educational Institutions in Government/Semi Government/ Reputable Private Organization.

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II & III.

**Part-II: (Commerce) 50 Marks (Descriptive)**

- I. **Introduction to Business Finance:** Nature and Scope of a Business Entity, Contemporary Challenges posed to a Business; Common Legal Forms of a Business Entity, Meaning, Nature and Scope of Finance, and Financial Management; Common Modes (Types) of Business Finance – Short-, Medium-, and Long-term Financing; Nature and Scope of Financial Markets and Institutions; Features and Classification of Financial Markets; Financial Management Techniques for Decision-making
- II. **Auditing:** Nature and Purpose of Auditing, Audit Planning and Control, Audit Procedures and Techniques, Audit Evidence and Documentation, Completion of an Audit, Performance of Audit, The Reporting of Audit, Internal Audit:
- III. **Role and Responsibilities of an Auditor:** Auditor's professional and legal Rights, Responsibilities & Duties, and Liabilities; Auditor's Opinion and Report, and their classification (Types); - as specified under the Companies Ordinance 1984, and in the handbook of IFAC.
- IV. **Fundamental Accounting Principles, Concepts, Assumptions and Conventions:** Nature and Scope of Accounting, Accrual/Matching Concept, Consistency of Presentation and Comparability, True and Fair View, Neutrality, Materiality, Prudence, Completeness, Understandability and Usefulness, Going Concern, and Substance over Form.
- V. **Cost Accounting:** Concepts and Scope of Cost Accounting, Cost Classification and Flows, Material Costing and Control, Labour Costing and Control, Factory Overhead Costing and Control, Types of Costing Systems
- VI. **Managerial Economics:** The Nature and Scope of Managerial Economics, Optimization Techniques and new Management Tools, Demand Theory, Demand Estimation, Demand Forecasting, Production and Cost Analysis, Cost Theory and Estimation, Linear Programming, Risk Analysis



- VII. Financial Management:** Elements of Financial Administration, Performance and Programmed Budgeting, Capital Budget, Principles of Budgeting, Auditing and Accounting.

### **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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	Fundamentals of Accounting Principles	Wild. Larson. Chiappetta
2.	Principles of Accounting, and Advanced Accounting	Sohail Afzal
3.	Cost Accounting	Nisar ur Din.
4.	Advanced Auditing	Prof. Dr. Khuaja Amjad Saeed
5.	Managerial Economics	Micheal Baye
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.4-166/2023-R
Particulars of post	<b>Statistician (BS-18)</b> , AFIRM, Ministry of Defence.
Minimum Qualification & Experience	Master in Statistics from a University recognized by HEC. (ii) Five (5) years post qualification experience in the relevant field in any Government Organization.

**Part-I: (MCQ) 25 Marks**

- 25 MCQ Questions on Part-II.

**Part-II (Statistics) (Subjective) : 75 Marks****I. Probability Distributions**

Discrete and continuous Probability Distributions. Properties, applications of Binomial, Poisson, Hyper-geometric, Normal Distribution and its properties, Standard Normal Curve, Normal approximation to Binomial and Poisson distribution.

**II. Regression & Correlation**

Concepts of Regression and Correlation and their application, Simple and Multiple Linear Regression (upto three variables), Estimation of the Parameters, Method of least square, Inference regarding regression parameters. Correlation, Correlation Coefficient, Properties of Correlation Coefficient, Inference regarding correlation coefficient, Partial Correlation and Multiple Correlation (upto three variables).

**III. Sampling & Sampling Distributions**

Population and Sample, Advantages of Sampling, Sampling Design, Probability & Non-Probability Sampling techniques. Brief Concepts of Simple Random, Stratified, Systematic, Cluster, Multiple and Multistage Sampling. Purposive, Quota Sampling, Convenience & Accidental Sampling. Sampling with and without replacement, Application of Central Limit Theorem in Sampling, Sampling Distribution of Mean, difference between two Means, Proportion, difference between two Proportion and Variance.

**IV. Statistical Inferences**

Estimation: Point Estimation, Properties of a good Estimator. Interval Estimation. Interval Estimation of Population mean. Large and small sample confidence intervals for Population Mean. Hypothesis Testing: Types of errors. Hypothesis Testing for Population Mean. Inferences for Two Population Means. Inferences for the Mean of Two Normal Populations using Independent Samples (variances are assumed Equal). Inference for Two Populations Mean using Paired Samples. Inferences for Population Proportions. Confidence Intervals and hypothesis Testing for Population Proportion. Inferences for Two Populations Proportions using Independent Samples, Estimation of sample size. Analysis of categorized data. Goodness of fit tests. Contingency tables. Test of independence in contingency tables.

**V. Analysis of Variance & Experimental Design**

One-way and Two-way Analysis of Variance, Design of Experiments, Concepts of Treatment, Replication, Blocking, Experimental Units and Experimental Error, Basic Principles of Design of Experiments, Description, Layout and Statistical Analysis of

Completely Randomized Design (CRD), Randomized Complete Block Design (RCBD), Multiple Comparison tests (LSD test).

### SUGGESTED READINGS

<b>S. No.</b>	<b>Titles</b>	<b>Author</b>
1.	Principles and Procedures of Statistics	Steel, R and Torrie, J.H.
2.	Introduction to Statistical Theory, Part-I & II	Chaudhry, S.M. and Kamal, S.
3.	Fundamentals of Modern Statistical Methods	Wilcox, R.
4.	Statistical Methods	Aggarwal, Y.P.

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

Case No.	F.4-172/2023-R
Particulars of post	<b>Biomedical Engineer (BS-18)</b> , Frontier Corps Balochistan Hospital, Ministry of Interior.
Minimum Qualification & Experience	<ul style="list-style-type: none"> <li>i. Second Class or Grade 'C' Master's/ Bachelor's (4 years education) degree in Biomedical Engineering or equivalent qualification from a University recognized by the HEC.</li> <li>ii. Five (5) years post qualification experience in 4 axis CNC Milling machine and CAD CAM technology.</li> </ul>

**Part-I: (MCQ) 25 Marks**

- 25 MCQ Questions on Part-II.

**Part-II (Professional) (Subjective) : 75 Marks****1. Human Anatomy:**

- **Introduction:** Anatomy and its branches, Anatomical positions, planes, topography.
- **Cell Anatomy:** Overview of Cellular Anatomy.
- **Extremities (Upper and Lower):** Bones, muscles, ligaments, tendons, bursae, reticulae, capsules, arteries, veins, Lymphatic system.
- **Vertebral Anatomy:** Vertebrae, Pelvic girdle, spinal cord, nervous system.
- **Thorax-Thoracic Viscera:** Surface anatomy, bones surface musculature, lungs, heart.
- **Abdomen:** Organs (location, structures, relations and function).
- **Head & Neck:** Bones, muscles, cranial nerves (location, structures, relations and function).

**2. Biomechanics**

- **Dynamics:** Rectilinear and curvilinear motion, Simple harmonic motion, Simple and multiple degrees of freedom, Application of these motions in human body and Biomedical machines.
- **Fluid Mechanics:** Basic concepts of Fluid Mechanics, Hydrodynamic lubrication of natural and normal synovial joints.
- **Biomedical Applications:** Mechanical properties of biological tissues and tissue mechanics, cardiac mechanics and modeling, muscle mechanics, gait kinetics, kinematics and analysis. Stress analysis and application to musculoskeletal system.

**3. Bio-Instrumentation**

- **Biological Systems:** Study of various Physiological systems, related biopotentials and physiological parameters.
- **Diagnostic Equipment:** invasive and non-invasive measurement techniques and related equipments.

- **Cardiovascular Measurements:** Electrocardiography, Measurement of Blood pressure, Blood flow and Cardiac output.
- **Biomedical Sensors & Transducers:** Introduction, principles, theory, design and applications.
- **Patient Monitoring Equipment:** Patient Monitors, central monitoring system, telemetry system, Gas Exchange and distributions, Respiratory therapy equipment.
- **Therapeutic Equipment:** ventilator, inhaler, defibrillator, pacemaker and heart lung machines.
- **Radiological Equipment:** concept of ionization and non-ionization radiation and related equipment, medical lasers and applications.
- **Safety in Medical Equipments:** Electrical/Mechanical safety, Standards of Medical Devices, Biohazards and Safety Regulations.

#### 4. Rehabilitation Engineering:

Overview, Design and Prescription of prosthetic limbs, orthotic, seating & positioning systems. Introduction to injuries, disability, human movement, kinesiology. Biomechanics, Gait analysis, prosthetics, orthotics and mobility assist technology. Improvement of performance and prevention of injuries.

#### SUGGESTED READINGS

S. No.	Title	Author
1.	Clinical Anatomy for Medical Students	Snell
2.	Principles Of Human Anatomy	Gerard J. Tortora,
3.	Clinical Anatomy. A Revision and Applied Anatomy For Clinical Students	Ellis, Horlad, P
4.	Human Anatomy	Frederic H. Martini
5.	Human Anatomy Plus Human Anatomy	N. Marieb,
6.	Bio-Mechanics Principles and Application	Schnech Bronzino
7.	Basic Biomechanics of the Musculoskeletal System	Margareta Nordin, Victor H Frankel
8.	Biomechanics and Motor Control of Human Movement	David A. Winter
9.	Research Methods in Biomechanics	Graham E. Caldwell
10.	Bio-Medical Instrumentation & Measures	Cromwell
11.	Biomedical Instruments: Theory & Design	Walter Welhowitz, Sid Deutsch and Metin Alsey,
12.	Handbook of Biomedical Instrumentation,	R.S. Khandpur,
13.	Medical Instrumentation: Application and Design	John G. Webster (Editor),
14.	Bioinstrumentation and Biosensors	Donald L. Wise,
15.	Biomechanics and Motor Control of Human Movement	David A. Winter,

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

Case No.	F.4-180/2023-R
Particulars of post	<b>Deputy Director (Male) (BS-18)</b> , Department of Explosives, Petroleum Division, Ministry of Energy.
Minimum Qualification & Experience	i) Second Class or Grade 'C' Master's degree in Chemistry from a University recognized by HEC. ii) Five (5) years post qualification experience in the field of public safety and security of licensed premises with respect of manufacturing, transportation, storage, import, export, selling and use of Petroleum Products, Commercial Explosives, Hazardous chemicals, Mineral & Industrial Compressed/ Liquefied Gases

**Part-I: 25 Marks (MCQ)**

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

**Part-II: (Chemistry) 75 Marks (Descriptive)**

- I. Atomic structure.—Quantum theory, Schrodinger equation, Particle in box, hydrogen atom. Hydrogen molecule ion, hydrogen molecule. Theories of hydrogen and metallic bonding.
- II. Electrochemistry.—Ionic equilibria, theory of strong electrolytes; Debye-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. Chemical Kinetics.—Rate law and its determination Order of reaction. Experimental methods. Temperature Dependence of rate constants. Study of mechanism of a few selected reactions (1st and 2nd under reaction only).
- VII. Surface Chemistry and Catalysis.—Physical adsorption and chemisorption. Surface area determination. Homogeneous and Heterogeneous Catalysis. Acid-base and Enzyme Catalysis.
- VIII. Physical Organic Chemistry.—Elements of Organic reaction mechanism. Optical and Geometric Isomerism. Conformational analysis. Resonance. H—Bond and its effects on the properties of Organic Compounds.
- IX. Aromatic Chemistry.—Structure of Benzene with particular reference to Mechanism of Electrophilic Substitution Reactions.
- X. Chemistry of Natural Products.—Elementary study of Carbohydrates. Oils and Fats. Alkaloids and Vitamins.
- XI. Industrial Organic Chemistry.—Organic Polymers. Fermentation processes including preparation of Anti-Biotics. Petro-Chemical Industry.

**SUGGESTED READINGS**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	Advanced Inorganic Chemistry	Cotton. F.A. and Wilkinson Groffrey
2.	Inorganic Chemistry,	Hukeavy, James E.
3.	Physical Chemistry	Moore, Walter J.
4.	Mechanism & Structure in Organic Chemistry	Gould, Edwards
5.	Organic Chemistry	Morrison, Robert Thornton & Boyd R.N.

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

Case No.	F.4-191/2023-R
Particulars of post	<b>Assistant Scientific Adviser (BS-18)</b> , Ministry of Science & Technology.
Minimum Qualification & Experience	i. Second Class or Grade 'C' M.Sc. in Natural Sciences or equivalent qualification from University recognized by HEC. ii. Five (5) years post qualification experience in Research & Development/ Science & Technology Management

**Part-I: 25 Marks (MCQ)**

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

**Part-II: (Research and Planning) 25 Marks (Descriptive)****i. Communication Skills, Technical Writing and Presentation Skills**

Paragraph writing, Essay writing, Translation skills, , Academic writing, Technical Report writing, Progress report writing,

**ii. Planning and Management****a) Project Management**

Project Management. Processes Integration Management, Project Plan Development, Project Plan Execution and Overall Change Control.

**b) Time Management**

Activity Definition, Activity Sequencing, Activity Duration Estimation, Schedule Development and Schedule Control.

**c) Statistical Techniques**

All statistical techniques related to Planning & Research

**Part-III: 25 Marks (Descriptive)**

(General Science)

**I. Basic Inorganic Chemistry**

Types of chemical bonding, ionic and covalent bonding, localized bond approach, theories of chemical bonding, valence bond theory (VBT), hybridization and resonance, prediction of molecular shapes using valence-shell electron-pair repulsion (VSEPR) model, Molecular orbital theory (MOT) applied to diatomic molecules, delocalized approach to bonding, bonding in electron deficient compounds, hydrogen bonding, Physical and chemical properties of p-block elements with emphasis on oxygen, carbon, chlorine, silicon, nitrogen, phosphorus and some of their representative compounds.

**II. Metabolism**

Digestion; absorption and transport of proteins, carbohydrates, lipids and nucleic acids. Glycolysis; citric acid cycle, gluconeogenesis, glycogenesis, glycogenolysis and photosynthesis.

Biosynthesis of triglycerides, phosphides, steroids and bile acids and ketone bodies.



Biochemical reaction of amino acids: decarboxylation, deamination, transamination and transmethylation, etc., urea cycle, creatine and uric acid synthesis.

Catabolism of nucleosides, DNA polymerases and other enzymes involves in metabolism.

### III. **Mechanics**

- 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.

### IV. **Modern and Quantum Physics**

- Waves and particles and De Broglie's Hypothesis; 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's 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;

## **Part-IV: 25 Marks (Descriptive)**

(Human Resource, Financial Management & Quality Management)

### I. **Human Resource and Financial Management**

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

### II. **Basic Concept of Quality Management**

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

**SUGGESTED READINGS**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	Practical English Grammar	A.J. Thomson and A.V. Martinet.
2.	Reading. Advanced	Brian Tomlinson and Rod Ellis.
3.	Study Skills	Richard Yorky
4.	Writing. Advanced	Ron White.
5.	College Writing Skills	John Langan.
6.	Project Management Body of Knowledge	Project Management Institute (PMI) standards committee
7.	Software Project Management	S.A. Kelkar, A Concise Study, Prentice Hall of India.
8.	Textbook of Inorganic Chemistry 2013	Chaudhary, S. U.
9.	Stereochemistry (Basic Concepts in Chemistry) 2002	Morris, D. G.
10.	Perspectives of Modern Physics.	A. Beiser.
11.	Introduction to Quantum Mechanics	D. Griffiths
12.	Human Resource Management	H.T. Graham & Roger Bennett
13.	Management	James A.F. Stoner, R. Eward Freeman, Daniel R. Gilbert Jr.
14.	Governance	Anne Mette Kjær

**PAPER-II: PROFESSIONAL**

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-192/2023-R
Particulars of post	<b>Chief Cardiac Perfusionist (BS-19)</b> , AFIC/ NIHD, Ministry of Defence.
Minimum Qualification & Experience	<p>i. Second Class or Grade 'C' Master's degree in Biological Sciences or equivalent qualification from a University recognized by HEC.</p> <p style="text-align: center;"><b>OR</b></p> <p>Second Class or Grade 'C' Bachelor's degree (16 years education) in Cardiac Perfusion or equivalent qualification from a University recognized by HEC.</p> <p>ii. Twelve (12) years post qualification experience in relevant field.</p>

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II.

**Part-II (Professional) (Subjective) : 75 Marks****I. Cardiovascular**

- Cardiovascular Anatomy
- Cardiovascular Physiology
- Cardiovascular Microbiology
- Cardiovascular Haematology

**II. Heart Diseases**

- Congenital Heart Disease and Surgical Treatment
- Acquired Heart Disease and Surgical Treatment

**III. Perfusion Technology**

- The theoretical foundations of techniques and equipment for CPB
- The function, principles, problems, appropriate use and application of the various devices associated with CPB
- Various physical principles associated with pressure/flow relationships in the circulatory and extracorporeal systems
- Various devices and techniques utilized to reduce a patient's exposure to homologous blood transfusion
- Normal and the abnormal electrolyte values related to physiological disturbances caused by CPB, including the use of cardioplegic solutions
- The role of hyper-, hypo-, and normothermia during CPB,
- The application, calibration and use of various safety devices, measurement devices
- The ethical, professional and legal implications of the practice of perfusion care
- The interplay between and among the various participants within the surgical team
- Various techniques utilized in the preservation of the myocardium
- Basic Goals and Concepts In Myocardial Protection
- Heparinization anticoagulation and other methods of preserving the number and function of various coagulation processes within the blood during CPB
- The application of hemodilution CPB

- The benefits and detriments associated with CPB
- The various effects of CPB and air-blood interface
- The principles associated with ECMO support and its application as related to perfusion care

### SUGGESTED READINGS

S. No.	Title	Author
1.	Cardiopulmonary Bypass: Current Concepts and Controversies.	John H Tinker
2.	Cardiovascular Physiology Concepts	Richard E Klabunde. Lippincott Williams& Wilkins
3.	Cardiopulmonary Bypass: Principles and Techniques of Extracorporeal Circulation	Christina T. Mora (Editor), R.A. Guyton, Springer
4.	Techniques in Extracorporeal Circulation	Philip Kay & Chris Munsch
5.	Daileys Notes on Blood	John F Dailey
6.	Cardiopulmonary Bypass Principles and Practice Second Edition,	Glenn P. Gravlee
7.	Mechanical Circulatory Support.	A Hodder Arnold Publication
8.	Manual of Clinical perfusion	

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

Case No.	F.4-194/2023-R
Particulars of post	<b>General Staff Officer, Grade-II (Bio Medical Tech) (Cyclotron Engineer) (BS-18)</b> , Armed Forces Institute of Radiology and Imaging, Ministry of Defence.
Minimum Qualification & Experience	i. Second Class or Grade 'C' Master's degree in Electronics or Second Class or Grade 'C' Bachelor's (4 years duration) degree in Electronics Engineering or equivalent qualification from a University recognized by HEC. ii. Five (5) years post qualification working experience at functional PET-CT Cyclotron System at any renowned PET-CT Clinical setup.

**Part-I: 25 Marks (MCQ)**  
25 MCQ Questions on Part-II.

**Part-II: (Professional) (Descriptive) 75 Marks**

- I. **Electricity & Electronics:** Electricity & Magnetism; Electrical potential, Resistance, Laws of resistance, Conductance, Conductivity, Impedance, Ohm law, Resistance in series and in parallel, practical resistors, work, power, Energy, Joule's law of electric field intensity, Gauss's Theorem, Capacitor, Capacitance, Capacitors in parallel and series. Force on a conductor in a magnetic field, electrical and magnetic circuits, leakage flux, Relation between magnetism and electricity, Induced emf, induced current and directions, Faraday's laws of electromagnetic inductions, Lenz's law, dynamically induced emf, Self inductance, mutual inductance and inductance in series/parallel, magnetic hysteresis, Energy stored in magnetic field, Generation of alternating currents and voltages.
- II. **Electrical Machines**  
DC Motors: Shunt, Series and Compound Motors, Speed and Torque Relations. Transformers: Principle, Construction, Voltage transformation ratio, Step-up/stepdown transformers, Copper & Iron Losses, Transformer connections; delta and star.  
AC Motors: Induction motor, Synchronous motor, Performance, Efficiency. Single phase and three phase Motors.  
Generators: Principle, Construction, Different components of generators. AC Generators, DC Generators.
- III. **Quality Management Systems:** QA models. Deming, Juran Crosby, Quality circles, management responsibility, quality planning, purchasing, design process and design validation, quality audit, corrective and preventive measures.
- IV. **Medical Imaging:**
  - **X-ray Imaging:** Physics of X-ray, Imaging with X-ray, Radiation dose, Attenuation based X-ray Imaging, X-ray Detection, X-ray Image Quality, Diagnostic Applications of X-ray Imaging, Demonstration of X-rays Equipment.
  - **Principles of Computed Tomography:** Introduction to Computed Tomography and Scanners, Attenuation Tomography, Time of Flight Tomography, Reflection Tomography, Diffraction Tomography, Formulation of Attenuation Computed Tomography, Fourier Slice theorem

- **Magnetic Resonance Imaging:** Physical and physiological principle of Magnetic Resonance Imaging, MR Imaging, Formulation of MRI reconstruction, Functional MRI, BOLD MRI, Applications of MRI and fMRI
- **Positron Emission Tomography:** Physical and physiological principles of PET, PET Signal Acquisition, PET Image formation, Significance of PET, Applications of PET

### SUGGESTED READINGS

S. No.	Title	Author
1.	Manufacturing Processes for Engineering Materials	Kalpakjian
2.	Electrical Technology	B.L. Tharaja
3.	Electronic Devices and Circuits.	Bogart
4.	DC Machines	P.C. Sen
5.	Semiconductors	Manzar Saeed
6.	Handbook of Engineering Management	Dennis Lock.
7.	Total Quality Management	Dale H. Besterfield, Mary Gesterfield
8.	The Essential Physics of Medical Imaging.	Bushberg J.T.,
9.	Foundations of Medical Imaging	Z. H. Cho,
10.		Richard Aston
11.	Digital Image Processing for Medical Applications	Geoff

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

Case No.	F.4-196 (A)/2023-R
Particulars of post	<b>Assistant Professor (Male) (BS-18) (Economics)</b> , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. <b>OR</b> 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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
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.4-196 (B)/2023-R
Particulars of post	<b>Assistant Professor (Male) (BS-18), (English)</b> , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. <b>OR</b> 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.	Bertens, H.
2.	Literary Theory: An Introduction. (Anniversary Edition).	Eagleton, E.
3.	A New Handbook of Literary Terms.	Mikics, W.
4.	A Companion to Twentieth Century Poetry.	Roberts, N.
5.	A Reader's Guide to Contemporary Literary Theory. (Fifth edition).	Selden, R., Widdowson, P., & Brooker, P.
6.	Twentieth Century British Drama.	Smart, J.
7.	Modern Critical Views & Interpretations,	Harold Bloom
8.	A Companion to 20 <sup>th</sup> Century Drama	Krasner David.
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.4-196 (C)/2023-R
Particulars of post	<b>Assistant Professor (Male) (BS-18), (Information Technology),</b> Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M.Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. <b>OR</b> 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. Introduction to Computing**

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

**II. Computer Communications & Networks**

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

**III. Database Systems**

Introduction to Database Systems, Relational Data Model & Relational Database Constraints, Relational Data Model, SQL, Relational Algebra & Calculus, ER Model, ER to Relational Mapping, PL/SQL Stored Procedures & Triggers, Functional Dependencies and Normalization, Storage & Indexing, Indexing Structure, XML documents & Web Services,

Query Processing & Evaluation, Query Optimization, Transaction processing, Object-Oriented Databases, Distributed Databases, Database Security & Access Control

#### IV. Operating Systems & Web

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

### 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.	Computer System Architecture	M. Morris Mano
2.	Software Engineering	Ian Sommerville
3.	Computer Networking: A Top Down approach featuring the Internet	James F. Kurose and Keith W. Ross
4.	Data and Computer Communications	William Stallings
5.	Database Systems Concepts	Silberchatz, Abraham & Korth, Sudarshan
6.	Computer Networks	Andrew Tanenbaum
7.	Web Services: Principles and Technology	Michael Papazoglu
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.4-196 (D)/2023-R
Particulars of post	<b>Assistant Professor (Male) (BS-18), (Mathematics)</b> , Federal Government Educational Institutions (FGEI) Directorate (Cantts/ Garrisons), Colleges, Ministry of Defence.
Minimum Qualification & Experience	Ph.D. degree in the relevant subject with one (1) year post qualification teaching experience at College/ University level. <b>OR</b> M. Phil degree in the relevant subject with three (3) years' post qualification teaching experience at College/ University level. <b>OR</b> 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. Modern Algebra**

- Group, subgroups, Lagranges theorem, Cyclic groups, Normal subgroups, Quotient groups. Fundamental theorem of homomorphism. Isomorphism theorems of groups, Inner automorphisms. Conjugate elements, conjugate subgroups. Commutator subgroups.
- Ring, Subrings, Integral domains, Quotient fields, Isomorphism theorems, Field extension and finite fields.

- Vector spaces, Linear independence, Bases, Dimension of a finitely generated space. Linear transformations, Matrices and their algebra. Reduction of matrices to their echelon form. Rank and nullity of a linear transformation.
- Solution of a system of homogeneous and non-homogeneous linear equations. Properties of determinants.

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

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

### **SUGGESTED READINGS**

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

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

Case No.	F.4-198/2023-R
Particulars of post	<b>Deputy Director (BS-18)</b> , Survey of Pakistan, Ministry of Defence.
Minimum Qualification & Experience	<p>M.Phil. degree in 'Remote Sensing &amp; Geographical Information System' / 'Geospatial Science' from a University recognized by the HEC with three (03) years' post qualification experience in the field of Surveying/ Mapping.</p> <p style="text-align: center;"><b>OR</b></p> <p>Second Class or Grade 'C' Master's or Bachelor's (4 years' education) degree in Geography/ Physics/ Geophysics/ Mathematics from a University recognized by the HEC with five (5) years' post qualification experience in the field of Surveying/ Mapping.</p> <p style="text-align: center;"><b>OR</b></p> <p>Bachelor's degree in Civil Engineering/ Geoinformatics/ Geomatics (GIS/RS) from a University recognized by the HEC/ PEC with five (5) years post qualification experience in the field of Surveying/ Mapping.</p>

**Part-I: 25 Marks (MCQ)**

- 25 MCQ Questions on Part-II & III.

**Part-II: (Professional) (Subjective)****50 Marks****I. Geographical Information System**

Definitions, key components, functional subsystem, Raster data model, vector data model, attribute data model, Data acquisition techniques, data sources, data capturing techniques and procedures, data transformation, visualization of spatial data, layers and projections and datums

**Map design:** symbols to portray points, lines, polygons and volumes, graphic variables, visual hierarchy, Data classification graphic approach, mathematical approach.

**Spatial analysis:** neighbourhood functions, network, and overlay analysis, buffering, spatial data quality: components of data quality, micro level components, macro level components, usage components, sources of errors, accuracy and resolution and uncertainty.

**II. Remote Sensing**

- History and Development
- Concepts and Foundation of Remote Sensing
- Electromagnetic spectrum
- Types of Remote Sensing Systems
- Types of Satellites
- Ground Receiving Stations (Reception of Data)
- Remote Sensing in Pakistan: Potential and Prospects

**III. Land Surveying**

- Instrumental survey and records
- Surveying using the following instruments:
  - ✓ Chain survey
  - ✓ Prismatic Compass
  - ✓ Determination of heights and slopes with Abney Level
  - ✓ Contouring by Indian Clinometer
  - ✓ Use of Dumpy level and Theodolite
  - ✓ Total station
  - ✓ Global Positioning System (GPS)

### Part-III: 25 Marks (Descriptive)

(Human Resource, Financial Management and Quality Management)

#### I. Human Resource and Financial Management

Definition, Significance and Scope of Human Resource Management; Approaches to Human Resource Management. Personnel Administration—Tools of Personnel Management: Selection, Communication Channels and Principles of Public Relations; Elements of Financial Administration, Principles of Budgeting,

#### II. Basic Concept of Quality Management

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

#### SUGGESTED READINGS

S. No.	Title	Author
1.	Geographic Information Systems	Aronoff, S. (2004)
2.	An Introduction to Map Work & Practical Geography	Bygot, J. (1960)
3.	Introduction to Remote Sensing,	Campbell, J. B. (2002)
4.	Fundamentals of Geographical Information Systems.	Demers, M.N. (2008)
5.	Introductory Remote Sensing: Principles and Concepts,	Jensen, J. (2000)
6.	Remote Sensing of the Environment: An Earth Resource Perspective. Second Edition.	Jensen, J. R. (2011)
7.	Cartography: Visualization of Spatial Data,	Kraak, M. J. (1996)
8.	Plane Surveying	Chandra, A. M. (2006)
9.	Advanced Surveying: Total Station, GIS and Remote Sensing	Gopi, S., Kumar, S., & Madu, R. N. (2007)
10.	Fundamentals of Surveying.	Roy, S. K. (2010)
11.	Human Resource Management	H.T. Graham & Roger Bennett
12.	Management	James A. F. Stoner, R. Eward Freeman, Daniel R. Gilbert Jr.