

**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. 06/2020**

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	11/2020	<b>Inspector (Legal)</b> (BS-16), Anti-Narcotics Force, Ministry Of Narcotics Control.	Second Class or Grade 'C' Bachelor's Degree in Law or equivalent qualification 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>▪ Investigation Chapter of Criminal Procedure Code,</li> <li>▪ Basic knowledge of "Qanun-e-Shahadat Order", 1984</li> <li>▪ Basic knowledge of Pakistan Penal Code,</li> <li>▪ Basic knowledge of Narcotics Substances Act, 1997</li> <li>▪ International Conventions and Agreements on Drug Control.</li> <li>▪ Role of United Nations Organization for Drug Control (UNODC)</li> <li>▪ Role of Pakistan's Anti Narcotics Control Setup in Drug Control</li> <li>▪ Money Laundering</li> </ul>
2.	41/2020	<b>Computer Supervisor</b> (BS-16), Economic Affairs Division, Ministry of Economic Affairs.	i. Second Class or Grade 'C' Bachelor's Degree in Computer Science/ I.T or equivalent from a University recognized by the HEC. OR Second Class or Grade 'C' Bachelor's Degree with Mathematics/ Statistics/ Physics/ Economics and one year diploma in Computer or equivalent from an Institute/ University recognized by the HEC. ii. Two (2) years post qualification experience in 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>▪ Generations of Computer</li> <li>▪ Computer Hardware/Software,</li> <li>▪ Windows 7, 8 or 10</li> <li>▪ Software Architecture,</li> <li>▪ Software Maintenance &amp; Optimization</li> <li>▪ Programming Techniques</li> <li>▪ Internet Configurations and planning</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
3.	42/2020	<b>Computer Programmer</b> (BS-17), National Library of Pakistan, National History and Literary Heritage Division.	Second Class or Grade 'C' Master's/ Bachelor's (4 years duration) Degree in Software Engineering/ Computer Engineering/ Computer System Engineering/ 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> Vocabulary, Grammar Usage, Sentence Structuring <b>Part-II</b> <ul style="list-style-type: none"> <li>▪ History of Computer Science</li> <li>▪ Networking</li> <li>▪ Software Engineering</li> <li>▪ Software Development Process,</li> <li>▪ Software Architecture,</li> <li>▪ Software Maintenance &amp; Optimization</li> <li>▪ Programming (Oracle/Webpage Development)</li> <li>▪ Internet Configurations and planning</li> </ul>
4.	43/2020	<b>Library Officer</b> (BS-16), Ministry of Defence (Defence Division).	Second Class or Grade 'C' Bachelor's Degree with diploma in Library Science OR Bachelor of Library Science.	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>• Information Sources and Services</li> <li>• Cataloguing: Theory and Practice</li> <li>• Procurement and Maintenance of Library Books</li> <li>• Library Automation/Information Storage &amp; Retrieval</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 regarding Write Off the Library Losses</li> </ul>
5.	45/2020	<b>Accounts Officer</b> (BS-17), Office of Chief Engineering Advisor/ Chief Federal Flood Commission, Ministry of Water Resources.	i. Second Class or Grade 'C' Master's Degree in Commerce/ Business Administration (Finance/ Accounts). ii. Two (2) years post qualification experience of Accounting/ Auditing/ Public Finance in Government/ Semi Government or a firm of repute	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>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
6.	46/2020	<b>Horticulturist/Garden Officer</b> (BS-16), CAO Office, GHQ, Ministry Of Defence.	Second Class or Grade 'C' Bachelor's Degree in Agriculture (Horticulture).	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>▪ Modern concept of Horticultural industry,</li> <li>▪ Plant propagation,</li> <li>▪ Major management and breeding problems in fruits and vegetables,</li> <li>▪ Principles of Fruit Production &amp; Vegetable Production,</li> <li>▪ Ornamental Horticulture,</li> <li>▪ Medicinal and Aromatic Plant</li> <li>▪ Production of Fruits &amp; Vegetables,</li> <li>▪ Landscape Plants,</li> <li>▪ Vegetable and Flower Seed Production ,</li> <li>▪ Propagation and Nursery Management ,</li> <li>▪ Flower Production,</li> <li>▪ Harvest and Handling of Horticultural Crops</li> </ul>
7.	47/2020	<b>Senior Scientific Assistant</b> (BS-16), Naval Headquarters, Ministry of Defence.	i. Second Class or Grade 'C' Bachelor's Degree in Science with Chemistry/ Chemical Technology. ii. Three (3) years post qualification experience in the field of prescribed qualification.	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>▪ Thermodynamics,</li> <li>▪ Nature, Properties and States of Matter,</li> <li>▪ Gases, Liquids &amp; Solids,</li> <li>▪ Organic Chemistry</li> <li>▪ In-Organic Chemistry</li> </ul>
8.	60/2020	<b>Scientific Officer</b> (BS-16 Plus 25% Special Pay), Gilgit Baltistan Environmental Protection Agency, Ministry of Kashmir Affairs and Gilgit Baltistan.	Second Class or Grade 'C' Master's Degree in Environmental Sciences/ Environmental Studies 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>▪ Environmental Law and Climate Change Policy</li> <li>▪ National Environmental Quality Standards (Drinking Water, Air and Noise)</li> <li>▪ Climate Change, Global Warming and greenhouse gases.</li> <li>▪ Biodiversity and role of forest in climate change.</li> <li>▪ Solid Waste Management, Biodegradation, Bioaccumulation, Bio magnification</li> <li>▪ Environmental Governance and Public Health</li> <li>▪ Principles of Air and Water quality monitoring</li> <li>▪ Tools of Environmental Management and Environmental Auditing System</li> <li>▪ Aesthetic pollution and its impact on natural beauty/ environment.</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
9.	61/2020	<b>Assistant Director</b> (BS-17 Plus 25% Special Pay), Gilgit Baltistan Environmental Protection Agency, Ministry of Kashmir Affairs and Gilgit Baltistan.	<p>i. Second Class or Grade 'C' Master's Degree in Environmental Sciences/ Environmental Studies OR Second Class or Grade 'C' Bachelor's Degree in Environmental Engineering or equivalent qualification from a University recognized by HEC/PEC.</p> <p>ii. Two (2) years post qualification experience in Environmental Impacts/ Protections in Public/ Private Sector.</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>▪ Environmental Law and Climate Change Policy and Multilateral Environmental Agreements</li> <li>▪ National Environmental Quality Standards (Drinking Water, Air and Noise) and principles of Air and Water quality monitoring</li> <li>▪ Climate Change, Global Warming and mitigation principles</li> <li>▪ Biodiversity and role of forest in climate change.</li> <li>▪ Solid Waste Management, Biodegradation, Bioaccumulation, Bio magnification</li> <li>▪ Environmental Governance and theories of EIA</li> <li>▪ Public Health, Urbanization and sustainable developemnt</li> <li>▪ Biogeochemical Cycles</li> <li>▪ Environmental Management, Environmental investigations of incidents and reporting.</li> </ul>
10.	66/2020	<b>Appraising/ Valuation Officer</b> (BS-16), Federal Board of Revenue (Revenue Division).	<p>i. Second Class or Grade 'C' Bachelor's degree from a recognized university with Economics, Commerce, Statistics, Accounting, Computer Science, Law, Pharmacy, Chemistry or Physics as one of the subjects or B.Sc Engineering in any specialty.</p> <p>ii. Computer literacy up to the level of MS Word, MS Power Point and MS Excel.</p>	<p>Objective Type Test (MCQ)</p> <p><b>Part-I</b> English = 20 marks</p> <p><b>Part-II</b> General Intelligence 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 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>– Issues/Challenges at National and International Level during the last 2 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 Computer Operation in MS Office</li> </ul> <p><b>Note : (Equal weightage for each topic at Part-II)</b></p>

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11.	68/2020	<b>Assistant Director (Technical)</b> (BS-17), Policy Wing, Petroleum Division, Ministry of Energy.	Bachelor's Degree in Engineering or equivalent qualification, recognized by Government, in Petroleum/ Mechanical/ Chemical/ Mining/ Electrical/ Refining/ Energy OR Second Class or Grade 'C' Master's Degree in Petroleum Geology/ Geophysics/ Geology/ Gas Technology.	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>▪ Petroleum Geology</li> <li>▪ Topography</li> <li>▪ Photogeology</li> <li>▪ Mineral Economics</li> <li>▪ Sampling of Mineral deposits</li> <li>▪ Exploration methods</li> <li>▪ Types of Geological Structure</li> </ul>
12.	69/2020	<b>Research Officer</b> (BS-17), Policy Wing, Petroleum Division, Ministry of Energy.	Second Class or Grade 'C' Master's Degree in Economics/ Commerce/ Statistics/ Business Administration/ Public Administration.	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>▪ Management, Planning, Goal Setting &amp; decision Making,</li> <li>▪ Role of HRM in Organizational Performance,</li> <li>▪ Issue &amp; Challenges of Public Administration in Pakistan</li> <li>▪ Research Methodology</li> <li>▪ Report Writing</li> </ul>
13.	76/2020	<b>Assistant Information Officer</b> (BS-16), Ministry of Information and Broadcasting.	i. Bachelor's Degree from a recognized University with ability to express well in English & Urdu. OR Degree/ Diploma in Journalism and knowledge of Foreign/ Classical language. ii. Three (3) years post qualification experience of practical Journalistic work in a recognized or established news agency or daily newspaper of repute or Radio or T.V. news organization with sufficient knowledge of Current Affairs.	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>• Current Affairs</li> <li>• Basic knowledge of computer/IT ,</li> <li>• Pros and Cons of Social Media</li> <li>• Press laws in Pakistan</li> <li>• Newsprint Control Ordinance 1971</li> <li>• Advertisement and Public Policy</li> <li>• Code of Ethics</li> <li>• Communication theories of social change</li> <li>• Newspaper Employees (Condition of service) Act 1973</li> <li>• PEMRA Ordinance, 2007</li> <li>• Reporting and Writing</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
14.	85/2020	<b>National Savings Officer</b> (BS-17), 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> <ul style="list-style-type: none"> <li>• Functions of National Savings Organization</li> <li>• Basic Accounting</li> <li>• Basic Auditing</li> <li>• Basic Public Finance</li> <li>• Basic Arithmetic (Rate, Ratios, Percentages, Compound Interest etc.)</li> <li>• Basic I.T. Knowledge</li> </ul>
15.	87/2020	<b>Senior Auditor</b> (BS-16), Pakistan Audit Department, Office of the Auditor General of Pakistan.	Second Class or Grade 'C' Bachelor's Degree in Business Administration (Finance/ Accounting)/ Commerce/ Economics/ Statistics/ Mathematics or equivalent from a University recognized by HEC. OR Second Class or Grade 'C' Bachelor's degree with ICMA one year post graduate Certificate or CA (Foundation) or ACCA (knowledge level qualified).	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>• Scrutiny of Record for Audit Purposes,</li> <li>• Journal, Ledger &amp; Cash Book,</li> <li>• Preparation of Annual Budget,</li> <li>• Adjustment &amp; Depreciation,</li> <li>• Financial Planning &amp; Cost Accounting,</li> <li>• Heads of Account, Re-appropriation of Funds and Supplementary Grant,</li> <li>• Settlement of Audit Objections</li> <li>• Preparation of Pension Documents.</li> <li>• Public Procurement Rules, 2004</li> </ul>
16.	90/2020	<b>Entomologist/Mycologist</b> (BS-17) Department of Plant Protection, Ministry of National Food Security and Research.	M.Sc Agriculture or B.Sc (Hons.) in Agriculture obtained after six years post-Matric study with specialization in Entomology/ Plant Protection or M.Sc (Zoology) with Entomology. OR M.Sc (Agriculture) or B.Sc (Hons.) in Agriculture obtained after six years post-Matric study with specialization in Plant Pathology or M.Sc (Botany) with Plant Pathology/ Mycology/ Microbiology.	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>▪ Pests and Diseases of economic importance.</li> <li>▪ Concepts of integrated Pest and Disease Management.</li> <li>▪ Morphological and Physiological basis of Plant Protection.</li> <li>▪ Plant Pests and disease diagnosis.</li> <li>▪ Seed health testing</li> <li>▪ Pesticides chemistry clarification and regulations.</li> <li>▪ Plant quarantine and SPS regulations.</li> <li>▪ Biotechnology.</li> <li>▪ Locust Biology and management.</li> <li>▪ Project planning and preparation.</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
17.	105/2020	<b>Sub Divisional Forest Officer</b> (BS-17 Plus 25% Special Pay), Forest, Parks & Wildlife Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.	i. M.Sc. Degree in Forestry. 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> Vocabulary, Grammar Usage, Sentence Structuring. <b>Part-II</b> <ul style="list-style-type: none"> <li>▪ Forest Management</li> <li>▪ Range Management</li> <li>▪ Watershed Management</li> <li>▪ The Gilgit Forest Rules 1932</li> <li>▪ Forest Types: Pakistan and Gilgit-Baltistan</li> <li>▪ Forest Biometrics</li> </ul>
18.	111/2020	<b>Charge Nurse</b> (BS-16), Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations and Coordination.	i. Registered Nurse and Registered Midwife with PNC. ii. For Male one (1) year course/ certificate in nursing related field in lieu of midwifery.	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>▪ 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>
19.	112/2020	<b>Assistant Director (Stores)</b> (BS-17), Geological Survey of Pakistan (Petroleum Division), Ministry of Energy.	i. Second Class or Grade 'C' M.A/M.Sc. Degree from a University recognized by the HEC. ii. Two (2) years post qualification experience of working in Procurement, Control distribution and maintenance of spare parts of vehicles and other Government stores.	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 <ul style="list-style-type: none"> <li>– Algebra</li> <li>– Ratios</li> <li>– Percentages</li> <li>– Arithmetic Means</li> </ul> </li> <li>• Basic knowledge of I.T</li> <li>• Procedures of Receipt and Issue of Stores</li> <li>• Stores handling procedures with relation to following topics:- <ul style="list-style-type: none"> <li>– Stock Taking</li> <li>– Care and Preservation of Store items</li> <li>– Ware House Management</li> </ul> </li> <li>• Public Procurement Rules, 2004</li> </ul>

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
20.	119/2020	<b>Administrative Officer</b> (BS-16), Naval Headquarters, Ministry of Defence.	i. Second Class or Grade 'C' Bachelor's Degree with Business Administration. ii. Three (3) years post qualification experience in Establishment/ Budget and Accounts/ Estate matters.	Objective Type Test (MCQ) <u><b>Part-I</b></u> English = 20 marks <u><b>Part-II</b></u> Professional Test=80 marks	<u><b>Part-I</b></u> Grammar Usage, Sentence Structuring <u><b>Part-II</b></u> <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               <ul style="list-style-type: none"> <li>- Algebra</li> <li>- Ratios</li> <li>- Percentages</li> <li>- Arithmetic Means</li> </ul> </li> <li>• Basic knowledge of Computer/IT.</li> </ul>
21.	122/2020	<b>Lecturer/Instructor (Chemistry)</b> (BS-17), Military College Jhelum, Ministry of Defence.	Second Class or Grade 'C' Master's degree in Chemistry from a University recognized by HEC.	Objective Type Test (MCQ) <u><b>Part-I</b></u> English = 20 marks <u><b>Part-II</b></u> Subject Test = 50 marks <u><b>Part-III</b></u> Professional Test = 30 marks	<u><b>Part-I</b></u> Vocabulary, Grammar Usage, Sentence Structuring <u><b>Part-II (Master's Level)</b></u> <ul style="list-style-type: none"> <li>• Chemical Kinetics,</li> <li>• Chemical Equilibrium,</li> <li>• Quantum Theory of Atom,</li> <li>• Synthetic Chemistry &amp; Polymers,</li> <li>• Reaction Mechanism,</li> <li>• Green Chemistry,</li> <li>• Spectroscopy,</li> <li>• Nano Technology,</li> <li>• Colloidal State.</li> </ul> <u><b>Part-III</b></u> <ul style="list-style-type: none"> <li>• Teaching Techniques and Methodology</li> <li>• Classroom Management and Discipline</li> <li>• Testing and Evaluation</li> </ul>



## Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 included in Consolidated Advertisement No. 06/2020

### PAPER-I: ENGLISH

Max Marks: 100

Time Allowed: 3 Hours

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

### SUGGESTED READINGS

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

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

Case No.	31/2020
Particulars of post	<b>Assistant Chief</b> (BS-18), Food and Agriculture Section, Ministry of Planning, Development and Special Initiatives.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's Degree or equivalent qualifications in Agriculture Economics OR Bachelor's Degree or equivalent qualifications in Agriculture/ Forestry/ Veterinary Science/ Animal Husbandry/ Agricultural Engineering.</p> <p>ii. Three (3) years post qualification experience of work and/or research relating to food and agriculture or agricultural planning or development.</p>

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

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

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

Paragraph writing, Essay writing, CV and job application, Translation skills, Study skills, Academic skills, Academic writing, Technical Report writing, Progress report writing, Presentation skills

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

Project Management, Processes Integration Management, Project Plan Development, Project Plan Execution and Overall Change Control, PERT, Gantt Chart, CPM

b) Scope Management

Initiation, Scope Planning, Scope Definition, Scope Verification and Scope Change Control.

c) Communications Management

Communications Planning, Information Distribution, Performance Reporting and Administrative Closure.

d) Risk Management

Risk Identification, Risk Quantification, Risk Response Development and Risk Response Control.

e) Statistical Techniques

All statistical techniques related to Planning & Research

**Part-III (Professional) (Subjective) : 50 Marks**

- I. Concept of Integrated Agriculture:** Components of natural resources as bases for agriculture production (Land, Water, biological, Environmental, Solar, Energy)
- II. Challenges in Pakistan's Agriculture:** Present scenario and future prospects. Analytical overview: issues and strategies for improvement of crop management,

livestock management, fisheries, cottage industry, resource management and rural development. Institutions and policies: issues and options.

- III. **Elements of Climate and their Relationship with Crop Growth:** Farming Systems, biological nitrogen fixation, soil profile, structure and texture, soil fertility, soil erosion and conservation, water logging and salinity
- IV. **Genetic Improvement for Crop Production:** GMO crops, Seed production technology.
- V. **Horticulture:** Floriculture, landscaping, pests and diseases of agriculture crops and their control, integrated pest management.
- VI. **Rainfed and Irrigated Agriculture:** Agriculture mechanization, land tenure and land reforms, role of agriculture in national economy.

### SUGGESTED READINGS

S. No.	Titles	Author
1.	Practical English Grammar	A.J. Thomson and A.V. Martinet.
2.	Writing. Upper-Intermediate	Rob Nolasco.
3.	Study Skills	Riachard Yorkey
4.	Writing. Advanced	Ron White.
5.	College Writing Skills	John Langan.
6.	Project Management Body of Knowledge,	Project Management Institute (PMI) standards committee
7.	Participatory Rural Development in Pakistan	Khan, M. H
8.	Agriculture in Pakistan	Khan M. H.
9.	Manual of Plant Production	Abdul Manan.
10.	Principles of Field Crop Production	Martin., J.H. & Leonard, W.H.
11.	Diseases of Field Crops	Dickson, J.G
12.	Irrigation Principles & Practices	Isrealson, O.W. Vaughn, E. Hansen.
13.	A Text Book of Plant Pathology	A.V.S.S. Sambamurti
14.	The Principles of Agronomy.	Harris, Franklin Stewart

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

Case No.	50/2020
Particulars of post	<b>Information Officer</b> (BS-18), Publicity and Public Relations Department, (Railways Board), Ministry Of Railways.
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's Degree in Political Science/ Public Administration/ International Relations/ Journalism. ii. Five (5) years post qualification experience in any leading National Newspapers/ Radio/ Television/ Journals of repute.

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

- 25 MCQ Questions on Part-II.

**Part-II (Professional) (Subjective) : 75 Marks****I. Mass Media in Pakistan:**

- Media system in Pakistan: historical, chronological, and analytical review
- The system of journalism and the media system
- Employer-employee relations in Pakistani media
- Government-press relations
- Press in Pakistan: The newspaper industry, from mission to the market
- Electronic media: from total dependence to enormous power
- The new 24/7 television: uses and abuses
- The new radio: potential for change and the present performance.
- The question of freedom and responsibility

**II. Public Relations:**

- Concept of Public Relations
- Historical development of public relations
- Public relation in Pakistan
- Ministry of information
- Press Information Department (PID)
- Public relations and publicity
- PR as a tool for governance
- Private PR agencies and their structure
- Basic methods of PR: press release, press note, press conference
- PR Ethics

**III. Media Laws and Ethics:**

- History of Media Laws in Pakistan
- Development of media regulations from British colonial era to independent Pakistan
- Libel, Defamation and relevant portions of PPC
- PPO, RPPPO
- PEMRA: establishment, development, and operational mechanisms
- Press Council of Pakistan (PCP)
- Citizens Media Commission: need, present status, and reasons for inactivity
- Press Code of Ethics
- Inability of the media to develop a code of ethics as an institution
- The media's quest for freedom and its inability to self-regulate.

- Issues and Challenges in use of Social Media.
- Pakistan Media Regulatory Authority Ordinance (PEMRA), 2007

### SUGGESTED READINGS

Sr. No.	Title	Author
1.	Ethics in Journalism: A Reader on Their Perception in the Third World	Kunczik, Michael (Ed.). FES 1999.
2.	News Media and Journalism in Pakistan	Khan, Altaf. LAP Lambert Academic Publishing. June 2011.
3.	Journalism–Principles and Practices	Vistaar Publications 2006
4.	The Hand Book of New Media	London: Sage
5.	"Public Relations-Writing & Media Techniques"	Harper Collins College Publishers, NY
6.	Telecommunications Policy in Pakistan"	Telematics and Informatics
7.	"Model Freedom of Information Act", 2001	Consumer rights Protection Commission of Pakistan

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

Case No.	62/2020
Particulars of post	<b>General Staff Officer, Grade-II (Bio Medical Tech) (Radio Pharmacist/ Radio Chemist) (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 Pharmacy or equivalent qualification from a University recognized by HEC/PCP. ii. Five (5) years post qualification working experience at PET-CT radiopharmaceutical production Lab at any renowned functional PET-CT setup.

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

- 25 MCQ Questions on Part-II.

**Part-II (Professional) (Subjective) : 75 Marks****I. Introduction to Nuclear Pharmacy**

Nuclear Pharmacy, Nuclear Medicine, Nuclear Pharmacist / Chemist, Specialty Certification of Nuclear Pharmacist, Radiopharmaceuticals, Radioisotopes, Concept of Dosage form in Nuclear Medicine, Radiation dose, Radiation & Radioactive decay, Principal forms of radiation, Units of activity, Half-life.

**II. Facility Layout**

Administrative area, Dispensing area, Reception area, Decontamination kit, Dedicated sink, Chemical Spill Kit & Waste Disposal.

**III. Radiopharmaceuticals**

Sterile & Nonsterile radiopharmaceuticals, Radiation safety considerations, Radiation Contamination Control, Kit, Aseptic Preparation of Radiopharmaceuticals, Classified area, Buffer area, Compounding, Dispensing, Expiration date, Garb, High efficiency particulate air (HEPA) filtration, Hot lab, Hot Cell, ISO Class, Primary engineering control (PEC), Pyrogen, Quality Control, Quality Assurance, Primary engineering control (PEC), Restricted area, Repackaging.

**IV. Operational Levels of Nuclear Pharmacy**

Operation level 1a, Operation level 1b, Operation level 2a, Operation level 2b, Operation level 3a, Operation level 3b, Operation level 3c

**V. Methods of Radiolabelling of Radiopharmaceuticals**

Ideal Characteristics of radiopharmaceuticals, General Consideration to design new radiopharmaceuticals, Factors influencing the design of new radiopharmaceuticals, Methods of radiolabelling (Isotope exchange, Introduction of foreign label, labelling with bifunctional chelating agent, biosynthesis, recoil labelling, excitation labelling), Important factors in labelling of radiopharmaceuticals, General Properties & Chemistry of technetium-99m.

## VI. Concept on PET/CT Radiopharmaceuticals (FDG)

FDG Production, Equipment's used in synthesis & Quality Control of FDG, Microbiological testing equipment's, Quality Control of final product & its Quality Assurance, Basics of the safe transport of FDG,

### SUGGESTED READINGS

Sr. No.	Title	Author
1.	Radiopharmaceuticals in Nuclear Pharmacy & Nuclear Medicine	Richard J. Kowalsky Steven W. Falen
2.	Operational Guidance On Hospital Radiopharmacy	International Atomic Energy Agency Vienna, 2008
3.	Radiopharmaceuticals – Preparation, Compounding, Dispensing & Repackaging	USP General Chapter on radiopharmaceuticals <825>
4.	Competency Based Hospital Radiopharmacy Training	International Atomic Energy Commission, Training Course 39, Vienna 2010
5.	Fundamentals of Nuclear Pharmacy	Gopal B. Saha Sixth Edition
6.	Cyclotron Produced Radionuclides: Guidance on Facility Design and Production of [18F] Fluorodeoxyglucose (FDG)	IAEA Radioisotopes & Radiopharmaceuticals Series No. 3

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

Case No.	64/2020
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) 50 Marks**Core courses of **MBBS Degree****Part-III: (Professional) (Descriptive) 25 Marks**Core courses of **FCPS (Radiology)**.



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

Case No.	106/2020
Particulars of post	<b>Assistant Chief</b> (BS-18), Health Section, Ministry of Planning, Development and Special Initiatives.
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's Degree or equivalent qualifications in Health Planning, Nutrition Planning. OR M.B.B.S. or equivalent. ii. Three (3) years post qualification experience of work and/ or research relating to medicine, surgery or public health or in planning and development in these fields.

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

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

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

Paragraph writing, Essay writing, CV and job application, Translation skills, Study skills, Academic skills, Academic writing, Technical Report writing, Progress report writing, Presentation skills

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

Project Management, Processes Integration Management, Project Plan Development, Project Plan Execution and Overall Change Control, PERT, Gantt Chart, CPM

b) Scope Management

Initiation, Scope Planning, Scope Definition, Scope Verification and Scope Change Control.

c) Communications Management

Communications Planning, Information Distribution, Performance Reporting and Administrative Closure.

d) Risk Management

Risk Identification, Risk Quantification, Risk Response Development and Risk Response Control.

e) Statistical Techniques

All statistical techniques related to Planning & Research

**Part-III (Professional) (Subjective) : 50 Marks****i. Meaning and Significance of Health Education**

- a. Definition and scope of Health Education
- b. Relationship of Health Education with Physical Education
- c. Importance of Health Education in Community

**ii. Community Health**

- a. Concepts in Community Health
- b. Health & Welfare

- c. Health & Development
  - d. Infectious diseases, Epidemiology
  - e. Disease Transmission
  - f. Immunity
  - g. Disease prevention and control
  - h. Disinfection
  - i. Symptoms, causes and prevention of most common communicable diseases
  - j. Epidemiology of non-communicable diseases and condition
- iii. **Environment and Human Health**
- a. Toxic pollutants and their effect on health
  - b. Mechanisms of action of drugs producing toxic effects of drugs on human body
  - c. Carcinogenic agents
  - d. Chemicals in food
  - e. Biological effects of Radiation
  - f. Sources of pollution: Air, Water, Noise

### SUGGESTED READINGS

S. No.	Titles	Author
1.	Practical English Grammar	A.J. Thomson and A.V. Martinet.
2.	Writing. Upper-Intermediate	Rob Nolasco.
3.	Study Skills	Riachard Yorcky
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.	Global Climatic Change,.	Honghton and R A,
9.	Health Factors for College Students.	Maude Lee & Heredge E T.

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

Case No.	114/2020
Particulars of post	<b>Executive Veterinary Officer</b> (BS-19), Remount Veterinary and Farms Directorate, GHQ, Ministry of Defence.
Minimum Qualification & Experience:	i. Ph. D (Veterinary Science) with basic degree of D.V.M. from a university recognized by HEC. ii. Registration with PVMC. iii. Eight (8) years post qualification experience in the relevant field. OR Retired Brig/ Col. Of RV&FC.

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

- 25 MCQ Questions on Part-II.

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

Protozoology: definition, history and differences from other unicellular organisms, Anatomy and physiology of protozoa, Classification, Morphology, Life cycle, Pathogenesis, Diagnosis and Control of the species of the following genera of Protozoa, Trypanosoma / Leshmania, Trichomonias and Histomonas, Entamoeba, Giardia and Balantidium, Eimeria and Isospora, Toxoplasma and Sarcocystis, Toxoplasmosis and Sarcocystosis and Plasmodium, Plasmodium, Haemoproteus, Leucocytozoan and Hepatozoan, Babesia, Theileria, Anaplasma & Cryptosporidium, Ehrlichia & Eperythrozoon, Protozoan zoonosis.

**II. Systemic Veterinary Pathology**

Digestive system, Skin and Appendages, Dermatophytes (Ring Worms), Mange: Psoroptic, chorioptic mange, neoplasia, Urinary system, Cardiovascular system, Nervous system, Respiratory system, Musculo-skeleton system, Rickets, Osteomalacia, Osteodystrophy, Osteoporosis, Osteopetrosis, Exostoses, neoplasia, Reproductive System, Postparturient Haemoglobinuria,

**III. Small Ruminant Production**

Scope and role of small ruminants, Sheep and goat as milch, meat and wool/hair producer. Grazing management systems and supplementary feeding, Management during drought, Record keeping of sheep and goat, Fencing on ranges, Shearing and handling wool/hair,

**IV. Ruminant Nutrition**

Nutrients, their classification and requirements, Concept of forage, concentrate and non-conventional feed resources in feeding of ruminants, Feeding standards, their usefulness and limitations for large ruminants. Feeding standards, their usefulness and limitations for small ruminants. Nutrient requirements of cattle for maintenance, production and reproduction. Nutrient requirements of buffaloes for maintenance, production and reproduction. Nutrient requirements of sheep for maintenance, production and reproduction, Nutrient requirements of beef animals for maintenance and fattening. Concept of digestibility and nitrogen balance. Feeding management of dairy animals at different physiological stages, Feeding practices of small ruminants, Nutritional management of grazing livestock, Feeding of calves from birth to puberty.

## V. Meat Production

Scope and importance of meat production in Pakistan, Present situation of meat industry and Problems of meat industry in Pakistan, Feeding of beef Animals, Breeding of beef Animals, Management of Beef Animals, Feed additives, hormones and Probiotics, Vitamins etc for enhanced growth Antibiotics, Factors affecting carcass and meat quality, Meat Hygiene, Storage and Preservation of Meat, Marketing of beef animals and beef, Modern Slaughter Houses, Slaughtering Methods.

### SUGGESTED READINGS

S. No.	Title	Author
1.	General Parasitology and Protozoology.	Akhtar, M., M. A. Hafeez and C. S. Hayat 2003.
2.	Techniques in Parasitology. Higher Education Commission, Pakistan	Iqbal, Z., M.S. Sajid, A. Jabbar, Z.A. Rao and M.N. Khan, 2006.
3.	Introduction to Veterinary Pathology.	Cheville, N. F., 2006.
4.	Pathologic Basis of Veterinary Disease	McGavin, D. M. and J. F. Zachary, 2006.
5.	Sheep and Goat Production, Univ. of Agriculture, Faisalabad.	Khan, B.B., A. Iqbal and M.I. Mustafa. 2003.
6.	Recent Advances in Ruminant Nutrition.	Garnsworthy and J. Wiseman. 2002.
7.	Commercial Poultry Nutrition,	Lesson, S. and J.D. Summers. 2001.
8.	Feed Manufacturing Technology	McEllihiney, R.R. 1994.
9.	Dictionary of Animal Nutrition and Feed Technology,.	Singhal, K.K. 1992.
10.	Meat Production and Technology in Pakistan, PARC, Islamabad.	Alvi, A.S. 1991.
11.	Meat Hygiene and Inspection.	Anwar, A.H. 1996.
12.	Meat Hygiene. Bailliere Tindall, UK.	Gracey, J. F. and Collins D.S. 1992

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

Case No.	115/2020
Particulars of post	<b>Superintending Engineer (B&amp;R/ E&amp;M)</b> , (BS-19), M.E.S, Ministry of Defence (Defence Division).
Minimum Qualification & Experience:	i. Master's Degree in Civil/ Electrical/ Mechanical Engineering from a recognized University. ii. Ten (10) years experience in the field of Civil/ Electrical/ Mechanical Engineering in BS-17 and above or equivalent.

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

- 25 MCQ Questions on Part-II.

**Part-II (Engineering) (Subjective) : 75 Marks****I. Civil Engineering Fundamentals:**

Structures; stress, strain, shearing force and bending moment concepts, beams, columns, footing. Simply supported and Cantilever beams, Pulleys and gears. Estimation, Quantity Surveying, Composite Schedule of Rates, Surveying and Levelling, Plain Tabling, Theodolite Survey;

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

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

**III. Mechanical Engineering Fundamentals**

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

Fluid Mechanics: Properties and basics of fluid mechanics, loss of head, power transformation by fluids, pumps, turbines. Fluid static's, Fluid dynamics, Types of flow: Turbulent and Laminar, Reynold's number.

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

**IV. 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.

#### V. **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.

#### VI. **Project Management:**

Time lines, milestones, resources allocation, dependency, Gant Charts, Preparation of PC-I, PC-II, PC-III & PC-IV, Financial Management of Projects

#### VII. **Inventory Management:**

FIFO models, LIFO 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.	Plain and reinforced concrete	Nilson.
2.	Strength of material	Andrew Pytel and Singer.
3.	Civil Engineer's Reference Book	LS Blake
4.	Surveying and Levelling	T.P Kanetaker.
5.	Public Health Engineering	STEEL.
6.	Fluid mechanics with engineering applications	Finnemore/ Franzini.
7.	Schaum Outline Series; Strength of Materials	Williym A. Nash
8.	Manufacturing Processes for Engineering Materials	Kalpapgjian
9.	Electrical Technology	B.L. Tharaja
10.	Electronic Devices and Circuits.	Bogart
11.	DC Machines	P.C. Sen
12.	Handbook of Engineering Management	Dennis Lock.
13.	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.	116/2020
Particulars of post	<b>Joint Director Legal Affairs (BS-19)</b> , Directorate of Legal Affairs of Pakistan Railways, (Railway Board), Ministry Of Railways.
Minimum Qualification & Experience:	i. LL.M. degree or Barrister-at-Law from a University/ Institute recognized by HEC. ii. Ten (10) years post qualification experience as an Advocate of Supreme Court/High Court. iii. Computer Literate in Microsoft Word, Excel and Spreadsheet. <b>OR</b> i. Second Class or Grade 'C' LL.B. degree from a University/ Institute recognized by HEC. ii. Twelve (12) years post qualification experience as an Advocate of Supreme Court/High Court. iii. Computer Literate in Microsoft Word, Excel and Spreadsheet.

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

- 25 MCQ Questions on Part-II.

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

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

**SUGGESTED READINGS**

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

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

Case No.	120/2020
Particulars of post	<b>Assistant Professor (Mathematics)</b> (BS-18), Military College Jhelum, 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 from a university recognized by HEC with five (5) year post qualification teaching experience at College/ University level.

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

- 25 MCQ Questions on Part-II & Part-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. Numerical Methods**

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



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

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

### **SUGGESTED READINGS**

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

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

Case No.	121/2020
Particulars of post	<b>Superintending Engineer (Floods)</b> (BS-19), Office of The Chief Engineering Adviser/ Chairman Federal Flood Commission, Ministry of Water Resources.
Minimum Qualification & Experience:	i. Bachelor's Degree in Civil Engineering OR an equivalent qualification from a recognized University/ Institution. ii. Twelve (12) years post qualification experience in Planning, Design or construction or operation of Dams, Irrigation or Hydraulic Works in BS-17 and above OR equivalent in a Government / Semi-Government / reputable private organization

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

- 25 MCQ Questions on Part-II.

**Part-II (Engineering) (Subjective) : 75 Marks****I. Civil Engineering Fundamentals:**

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

**II. Environmental Engineering:**

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

**III. Fundamentals of Hydraulic Engineering:**

Properties of fluid mechanics, pressure measuring devices, flow measuring devices, losses in pipelines, open channels, barrages and dams.

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

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

**V. Project Management:**

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

**VI. Inventory Management:**

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

**VII. Quality Management Systems:**

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

**SUGGESTED READINGS**

<b>S.No.</b>	<b>Title</b>	<b>Author</b>
1.	Properties of Concrete	A.M. Neville.
2.	Plain and reinforced concrete	Nilson.
3.	Strength of material	Andrew Pytel and Singer.
4.	Transportation Engineering, Planning and design	Paul Wright.
5.	Civil Engineer's Reference Book	LS Blake
6.	Surveying and Leveling	T.P Kanetaker.
7.	Public Health Engineering	STEEL.
8.	Fluid mechanics with engineering applications	Finnemore/ Franzini.
9.	Handbook of Engineering Management	Dennis Lock.
10.	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.	123/2020
Particulars of post	<b>Deputy Engineering Adviser (Power)/ Government Inspector of Electricity</b> (BS-19), Office of the Chief Engineering Adviser/ Chairman Federal Flood Commission, Ministry of Water Resources.
Minimum Qualification & Experience:	<p>i. Bachelor's Degree in Electrical Engineering or an equivalent qualification from a recognized University/ Institution.</p> <p>ii. Twelve (12) years post qualification experience in Planning, Design or operation of Hydroelectric or Thermal Power Stations or High Voltage Transmission Systems, or distribution systems in BS-17 and above or equivalent in a Government/ semi-Government/ reputable private organization.</p>

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

- 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/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. Power Systems:**

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

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

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

**V. Project Management:**

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

**VI. Inventory Management:**

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

**VII. 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**

<b>S. No.</b>	<b>Title</b>	<b>Author</b>
1.	Electrical Technology	B.L. Tharaja
2.	Electronic Devices and Circuits.	Bogart
3.	DC Machines	P.C. Sen
4.	Handbook of Engineering Management	Dennis Lock.
5.	Total Quality Management	Dale H. Besterfield, Carol Besterfield-Michna, Glen H. Besterfield, Mary Gesterfield-Sacre