

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. 04/2022

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	61/2022	Demonstrator (Male) (BS-16), Federal Government Educational Institution (FGEI) (Cantts/ Garrisons), Ministry of Defence.	Second Class or Grade 'C' Master's Degree in Physics/ Chemistry/ Biology.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II General Science Test=80 marks	Part-I Grammar Usage, Sentence Structuring Part-II • Physics: • Heat & Thermodynamics, • Electrostatics, • Electromagnetism, • Waves and Optics • Chemistry: • Thermodynamics, • Nature, Properties and States of Matter, • Gases, Liquids & Solids, • Organic Chemistry. • Biology: • Viruses & Algae • Bryophyte • Protozoa • Mollusca • Maintenance and Management of Science Laboratories.
2.	64/2022	Secondary School Teacher (SST) (Female) (BS-17), F.G. Schools, Directorate of Federal Government Educational Institutions (Cantts/ Garrisons), 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) Part-I English =20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II • Perspectives of Education in Pakistan • School Administration & Supervision • Planning & Management in Education • Educational Psychology • Curriculum Development & Assessment • Teaching Methodology • Classroom Management • Educational Measurement & Evaluation • Research Techniques in Education • Educational System in Pakistan • Educational Guidance & Counselling

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
3.	70/2022	Senior Scientific Assistant (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) <u>Part-I</u> English =20 marks <u>Part-II</u> Professional Test=80 marks	<u>Part-I</u> Grammar Usage, Sentence Structuring <u>Part-II</u> <ul style="list-style-type: none"> ▪ Thermodynamics, ▪ Nature, Properties and States of Matter, ▪ Gases, Liquids & Solids, ▪ Organic Chemistry ▪ In-Organic Chemistry

Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 included in Consolidated Advertisement No. 04/2022

PAPER-I: ENGLISH

Max Marks: 100

Time Allowed: 3 Hours

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

SUGGESTED READINGS

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

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

Case No.	F.4-60/2022-R
Particulars of post	General Staff Officer, Grade-I (Classified Radiologist) (BS-19), Neuro Radiology Department, Armed Forces Institute of Radiology and Imaging, Ministry of Defence.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i. MBBS or equivalent qualification from a University recognized by PM&DC. ii. FCPS (Radiology) or equivalent qualification recognized/registered by the PM&DC. iii. One (1) year Fellowship degree/ OJT in Neuro Radiology. iv. Seven (7) years post qualification working experience at any renowned medical imaging setup.

Part-I: 25 Marks (MCQ)

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

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

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

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

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

Case No.	F.4-62/2022-R
Particulars of post	General Staff Officer, Grade-I (Classified Radiologist) (BS-19), Musculoskeletal Radiology Department, Armed Forces Institute of Radiology and Imaging, Ministry of Defence.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i) MBBS or equivalent qualification from a University recognized by PM&DC. ii) FCPS (Radiology) or equivalent qualification recognized/registered by the PM&DC. iii) One (1) year Fellowship degree/ OJT in Musculoskeletal Radiology. iv) Seven (7) years post qualification working experience at any renowned medical imaging setup.

Part-I: 25 Marks (MCQ)

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

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

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

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

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

Case No.	F.4-63/2022-R
Particulars of post	Deputy Director (Town Planning) (BS-19), ML&C Department, Ministry of Defence.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i. Second Class or Grade 'C' B.Sc Degree from a recognized University in Town Planning. ii. Associate Member of the Pakistan Institute of City and Regional Planning. iii. Twelve (12) years post qualification practical experience in the field of Town Planning. iv. Must be registered with Pakistan Council of Architects & Town Planners.

Part-I: 25 Marks (MCQ)

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

Part-II: (Town Planning) 50 Marks (Descriptive)

- I. Definition of Town Planning, Goals and objectives of Town Planning:** Town Planning as a multi-disciplinary approach and relationship of Town Planning with other professions.
- II. Historical Perspective of Urban Planning:** Planning of historical towns in the world. Examples of planned towns in Europe, Nile Valley region, Euphrates and Tigris Valley region and Indus Valley region (Mohenjodaro, Harappa, Kot Diji & Mehr Garh and Gandhara Civilization).
- III. Urban Rural Differences and Hierarchy of Settlements:** Urbanization and its effects on the environment of urban areas.
- IV. Public Policy and Urban Design Management:** Solving social and environmental problems using:
 - a. Economics,
 - b. Policy analysis,
 - c. Political science and
 - d. Urban Design
- V. Urban Information Systems:** Use of planning related software and spatial analysis tools and systems e.g. GIS, SPSS etc.

Part-III: 25 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, Principles of Organization, 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; Elements of Financial Administration, Principles of Budgeting, Auditing and Accounting.

II. Basic Concept of Quality Management

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

SUGGESTED READINGS

S. No.	Title	Author
1.	Introducing Town Planning	Clara Greed
2.	Introduction to Town and Country Planning	John Ratcliff
3.	Town Planning for the Third World	A.K. Bhatti
4.	Contemporary Urban Planning	J.M. Levy
5.	Land Use, Planning, and Zoning	Peter J. Loughlin,
6.	Town Planning in Practice	Raymond Unwin,
7.	Human Resource Management	H.T. Graham & Roger Bennett
8.	Management	James A.F. Stoner, R. Edward Freeman, Daniel R. Gilbert Jr.

PAPER-II: PROFESSIONALMax Marks: 100Time Allowed: 3 Hours

Case No.	F.4-65/2022-R
Particulars of post	Joint Commissioner for Indus Waters (BS-19), Office of the Pakistan Commissioner for Indus Waters, Ministry of Water Resources.
Minimum Qualification & Experience:	<ul style="list-style-type: none"> i. Bachelor's Degree in Civil Engineering/ Agricultural Engineering, Registration with PEC required or recognized by HEC. ii. Twelve (12) years post qualification experience in any or all the fields of Designing/ Construction/ Maintenance and operation of irrigation or River Works in responsible position equivalent to BS-17 and above in Govt./ Semi Govt./ Public or highly reputable private Organization.

Syllabus under Process

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

Case No.	F.4-66/2022-R
Particulars of post	Chief Documentation Officer (BS-19) , Academy of Educational Planning and Management, Ministry of Federal Education And Professional Training.
Minimum Qualification & Experience:	Ph.D in Library Science with eight (8) years post qualification experience in the relevant field. OR M.Phil in Library Science with ten (10) years post qualification experience in the relevant field. OR Second Class or Grade 'C' Master's Degree in Library Science with twelve (12) years post qualification experience in the relevant field.

Part-I: 25 Marks (MCQ)

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

Part-II: 25 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, Principles of Organization, 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; Elements of Financial Administration, 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, Characteristics of Computer and related material; 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;

Part-III: (Library/Information Science) 50 Marks**I. Use of Emerging Technologies in Library**

Information and other Library Technologies. Hardware. Software. Operating System. Telecommunications and Networks. Internet and the www, Barcode Technology, Wireless Technology and Virtual Private Network (VPN). Social Networking. Email. Word Processing. Spreadsheets. Presentation Software. Desktop Publishing.

Databases. Library Security Systems. Tele-lifts. Digitization Hardware and Software. Reprographic Technology.

ii. Organization of Information

Systems for Organization of Information: Environments, Storage and Retrieval Tools, Encoding Standards, Cataloguing Codes, Current Systems. The Information Organization Process: Surrogate/ Metadata Records: Description, Access; Authority Control. Subject Access: Analysis, Verbal Subject Approaches, Classification. Organization and Administration: Arrangement, Management Issues. Problems of Information Organization in Pakistan.

iii. Basic Reference Sources

Definition. Evaluation Criteria. Bibliographies-- General Bibliographies, Basic Guides To Reference Materials, Library Catalogues; Serials Guides; Indexes and Abstracts; HEC NDL; Dictionaries and Thesauri; Almanacs And Fact Books; Encyclopaedias; Directories; Biographical Sources; Geographical Sources-- Maps, Atlases & Gazetteers; Reference Websites.

iv. Management of Library and Information Services

Basic Theories and Principles of Administration for Effective Management of Public, Academic, and Special Libraries and Information Centres with emphasis on Planning, Organizing, Staffing, Directing, Coordinating, Reporting, and Budgeting. Administrative Aspects of Public and Technical Services, Facilities, Rules and Regulations, Evaluation, Public Relations, Inter-Agency Cooperation, and Change Management. Library Space Management.

SUGGESTED READINGS

S. No.	Title	Author
1.	Human Resource Management	H.T. Graham & Roger Bennett
2.	Management	James A.F. Stoner, R. Edward 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.	Governance	Anne Mette Kjær
6.	The Electronic Library.	Rowley, J. (2001).
7.	Role of ICTs in Library and Information Science	A. Kaliammal & G. Thamaraiselvi
8.	Discovering computers 2007: A gateway to information.	Shelly, G. B., Cashman, T. J., & Vermaat, M. (2007).
9.	Guide to selecting and cataloging quality WWW resources for the small library.	Coleman, A. (2004).
10.	Jadid Catalogue Sazi	Khurshid, Anis (1993)
11.	Reference and information services: An introduction.	Bopp, R. E., & Smith, L. C. (2001).
12.	Introduction to reference work: Vol. 1,	Katz, W. A. (2002).
13.	Management basics for information professionals	Evans, G. E., Layzell Ward, P., Rugaas, B., & Evans, G. E. (2007).
14.	The Practical Library Manager.	Massis, B. E. (2003).

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

Case No.	F.4-67/2022-R
Particulars of post	Director (BS-19), Geological Survey of Pakistan, Ministry of Energy (Petroleum Division).
Minimum Qualification & Experience:	i. Second Class or Grade 'C' M.Sc. degree in Geology or equivalent qualification from a University recognized by the HEC. ii. Post qualification Research experience of twelve (12) years in the field of Geology including three (3) years experience to plan, organize, conduct and supervise geological field programme for geological surveys. iii. Must have published five (5) research papers in the fields of Geology

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

Part-II: (Geology) : 75 Marks (Descriptive)**I. Stratigraphy and Palaeontology**

Principles of stratigraphy; laws of superposition and faunal succession. Geological time scale with divisions. Classification and nomenclature of stratigraphic units: lithostratigraphic units, biostratigraphic units and chronostratigraphic units.

Introduction to fossils and their significance; modes of fossilization, Study of morphology, range and broad classification of major invertebrate phyla; Introduction to micro fossils; Introduction to Paleobotany; Introduction and classification of major vertebrates; Introduction to micropaleontology

II. Structural Geology and Tectonics

Stress-strain concepts; factors which control the mechanical behavior of materials; Folds, Faults, Joints, Foliation: terminology, classification and relationship with bedding; Lineation, Unconformity.

Plate tectonics theory; Geological evidences for continental drift; Sea-floor spreading; Oceanic ridges; Continental rifts; Intra-oceanic islands; Hot spot and Mantle plumes; Wilson Cycle; Tectonic framework of Pakistan.

III. Mineral and Energy Resources

Introduction of geological exploration/prospecting. Brief description of hydrocarbons, coal, gemstones, copper, lead, zinc, iron, gold, chromite, manganese, salt, gypsum, bauxite, sulphur, barite, fluorite, clays, phosphorite, building and dimension stones, industrial rocks and minerals, radioactive minerals and rocks with special reference to economic mineral deposits in Pakistan.

Origin, occurrence, and depositional environments of coal; coal Constitution and kinds of coals. Coal rank, grade and calorific value. Coal deposits of Pakistan with reference to Thar Coal. Geothermal energy resources of Pakistan.

IV. Engineering and Environmental Geology

Rock and soil mechanics and its application in civil engineering; Rock mass characteristics; Geotechnical studies of rocks and soils; Geological factors and strength of rocks; Study of geological factors in relation to the construction of

buildings and foundations, roads, highways, tunnels, dams and bridges; Application of geophysical methods for site investigation; Construction materials; Mass movement, their causes and prevention.

V. Economic and Applied Geology

Metallic and Non-metallic mineral resources of Pakistan. Mineral-based industries. Overview of Recodec Copper. Radioactive minerals and their occurrences in Pakistan. Gemstones of Pakistan

Geology of Reservoirs, Dams .Highways and Tunnels. Major natural hazards and their Impact on the environment with special reference to Pakistan.

SUGGESTED READINGS

S. No.	Title	Author
1.	Principles of Paleontology	Raup, D.M. & Stanley, S.M
2.	Principles of Sedimentology and Stratigraphy	Boggs, S
3.	Mineralogy	Perkins, D
4.	Plate Tectonics – Geodynamics	Moores, E.M. & Twiss, R.J
5.	Structural Geology	Twiss, R.J. & Moores, E.M.,
6.	Sequence Stratigraphy	Emery, D. & Myers, K.J.,
7.	Geology of Pakistan	Bender, F.K. & Raza, H.A.,
8.	Environmental Geology	Montgomery, C.W.,
9.	Economic Geology: Principles and Practice	Walter L. Pohl
10.	Energy Resources	Brown and Skipsy
11.	Pakistan Energy Yearbook 2012	Hydrocarbon Development Institute of Pakistan. Islamabad, Ministry of Petroleum and Natural Resources

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

Case No.	F.4-68/2022-R
Particulars of post	Senior Admin Officer (BS-18), Federal Government Educational Institutions (FGEI) (Cantts/Garrisons) Directorate, Ministry of Defence.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's Degree in Business Administration / Public Administration / Educational Planning and Management (EPM) or equivalent qualification from a University recognized by HEC.</p> <p>ii. Five (5) years post qualification experience of Administration / Management in a Public / Private Organization in BS-17 & above or equivalent.</p>

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: 50 Marks (Descriptive)

(Public Administration, Office Management & Professional)

- I. **Public Administration:** Nature and scope, Role of Public Administration in a modern Welfare State;
- II. **Bureaucracy:** Concept of Bureaucracy, Theories of Bureaucracy, Ecology of Bureaucracy; Bureaucracy; of Pakistan as a Change Agent;
- III. **Administrative Leadership:** Approaches to the study of Leadership, Forms of Leadership, Leadership qualities;
- IV. **Administrative Accountability:** Internal and External Controls; Executive Control, Legislative Control, Judicial Control, Ombudsman, Public Opinion and Pressure Groups; Problems of Administrative Accountability in Pakistan;
- V. **Controlling and Co-Ordination:** Forms of Controls, Control Mechanism, the process of Control, Principles of Controlling; Principles Coordination; Machinery for Coordination; Problems of Coordination in Public Administration in Pakistan.
- VI. Civil Servant Act 1973 and Rules made thereunder;
- VII. Rules of Business 1973;
- VIII. Secretariat Instructions and Office Procedures;
- IX. Public Procurement Ordinance and Rules 2004.

Part-III: 25 Marks (Descriptive)

(Human Resource, Financial Management and Quality Management)

I. Human Resource and Financial Management

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

Behaviour and Organizations Administration.—Elements of Financial Administration, Performance Programmed Budgeting, Capital Budget, Principles of Budgeting, Auditing and Accounting.

II. Basic Concept of Quality Management

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

SUGGESTED READINGS

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

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

Case No.	F.4-69 (A)/2022-R
Particulars of post	Assistant Professor (Male) (Biology) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Biology) (Subjective)**50 Marks****I. Anatomy and Embryology**

- Primary and secondary tissues. Meristems. Secondary growth in dicot stem. Anatomy of leaf, stem and root.
- Micro and mega sporogenesis, pollination mechanism, fertilization, development of Embryo and Endosperm, Seed dispersal.

II. Plant Physiology

- Plant water relations, Osmotic Quantities, component potentials of water and their role in transport, water absorption by roots, transpiration. Role of essential mineral elements and their uptake. Plant hormones. Photoperiodism, Vernalization. Dormancy and Seed germination. Enzymes.
- Photosynthesis: Plant pigments, Light reaction, CO₂ fixation, Mechanism of photophosphorylation.
- Respiration: Glycolysis, Krebs cycle, Mechanism of oxidative phosphorylation.

III. Genetics & Evolution

- Mendelian Genetics, Multiple Alleles, Polygenic inheritance, Gene interaction, Epistasis and pleiotropy, Sex-linked inheritance, Chromosomal aberrations, Mutations, DNA repair.
- Evolution of life, Convergent Evolution, Divergent Evolution, Parallel Evolution and Natural selection

IV. Molecular Biology

- Nucleic acids, DNA as hereditary material, DNA replication, Transcription, Genetic code, Protein synthesis, Genetic engineering and its application, Genetically Modified Organisms (GMO).

V. Animal Form and Function

- Protection, Support and Movement: Integumentary system of invertebrates and vertebrates; Animal muscles: the muscular system of invertebrates and vertebrates.

- Digestion and Nutrition: Feeding mechanism, Digestion, Organization and regional function of alimentary canal, Regulation of food intake, Nutritional requirements
- Internal Fluids and Respiration: Internal fluid environment, Composition of blood, Circulation and respiration mechanisms

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.	Comparative Morphology of the Vascular Plants	Foster, A.S. and E.H. Gifford.
2.	Genetics: A Conceptual Approach.	Pierce, B. A.
3.	Molecular Cell Biology	Lodish, H., A. Berk, S.L. Zipursky, P. Matsudaira, D. Baltimore and J. Darnell
4.	Ilmi Biomolecules, Cell Biology and Genetics.	Cheema, T.A. and Cheema Z.T. 2009
5.	Growth and Differentiation in Plants	Phillips and Wareings
6.	Animal behavior:- An Evolutionary Approach	John Alcock
7.	Biology	Campbell, N.A.
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.4-69 (B)/2022-R
Particulars of post	Assistant Professor (Male) (Botany) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Botany) (Subjective)**50 Marks****I. Algae, Fungi and Bryophytes**

- Phycology: Distribution, Classification, Structure, Life History and Economic importance of the main groups of Algae.
- Mycology and Plant Pathology: Structure, Reproduction, Classification and Economic importance of the main groups of Fungi. Diseases of economically important crops and general principles of their control
- Bryology: Structure and reproduction of bryophytes, Evolution of Gametophyte and Sporophyte.

II. Anatomy and Embryology

- Primary and secondary tissues. Meristems. Secondary growth in dicot stem. Anatomy of leaf, stem and root.
- Micro and megasporogenesis, pollination mechanism, fertilization, development of Embryo and Endosperm, Seed dispersal.

III. Plant Physiology

- Plant water relations, Osmotic Quantities, component potentials of water and their role in transport, water absorption by roots, transpiration. Role of essential mineral elements and their uptake. Plant hormones. Photoperiodism, Vernalization. Dormancy and Seed germination. Enzymes.
- Photosynthesis: Plant pigments, Light reaction, CO₂ fixation, Mechanism of photophosphorylation.
- Respiration: Glycolysis, Krebs cycle, Mechanism of oxidative phosphorylation.

IV. Ecology

- Influence of climatic, edaphic and biotic factors on plant growth. Vegetation sampling techniques. Concepts of ecosystems and their productivity, ecological energetics, Pyramids (of numbers, biomass and energy), trophic levels, food chains and food webs. Biogeochemical cycles (Hydrological and Nitrogen). Succession.
- Causes and reclamation of soil salinity and water logging in Pakistan. Soil erosion, its control and soil conservation methods. Deforestation. Biodiversity conservation. Pollution.

V. Cytology

- Cell cycle, cellular morphology, chemistry of cell wall and cell membrane, cell to cell communication, plant tissue and cell culture, cell senescence and cell death.

- Ultra-structure of various cell organelles: Mitochondria, Golgi bodies, Endoplasmic reticulum, Plastids, Ribosomes, Glyoxysomes, Vacuoles, Nucleus.

VI. Molecular Biology

- Nucleic acids, DNA as hereditary material, DNA replication, Transcription, Genetic code, Protein synthesis, Genetic engineering and its application, Genetically Modified Organisms (GMO).

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.	Cryptogamic Botany-Algae and Fungi	Smith, G. M. 2001
2.	Cryptogamic Botany-Bryophyte and Pteridophyte	Smith, G. M. 2001
3.	Plant and Environment	Daubermine, R, F, 1974
4.	Plant Taxonomy and Biosystematics	Stac, C. A. 1980
5.	Plant Physiology	Taiz, L.& E. Zeiger 2006
6.	Genetics: A Conceptual Approach. 4 th edition	Pierce, B. A. 2012
7.	Concepts of Genetics. 10 th edition	William S. Klug. 2012
8.	Ilmi Biomolecules, Cell Biology and Genetics.	Cheema, T.A. and Cheema Z.T. 2009
9.	Morphology of Plants	Malik, T. A. 2006
10.	Fundamentals of Ecology	Odum, E.P. and Barrett, G.W. 2004
11.	Advanced Plant Taxonomy	Mondal, A. K., 2009
12.	Growth and Differentiation in Plants	Phillips and Wareings
13.	Research in Education	JW Best
14.	Integrating Education Technology into Teaching	Roblyer
15.	Curriculum Development	S. M. Shahid
16.	Educational Measurement and Evaluation	S. M. Shahid
17.	Educational Administration	S. M. Shahid

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

Case No.	F.4-69 (C)/2022-R
Particulars of post	Assistant Professor (Male) (Business Administration) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

II. Financial Accounting

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

III. Introduction to HRM

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

IV. Marketing Management

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

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

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

V. Development of Curriculum and Instructional Material

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

VI. Process of Teaching and Teaching Strategies

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

VII. Educational Assessment and Evaluation

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

VIII. Research Methods in Education

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

SUGGESTED READINGS

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

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

Case No.	F.4-69 (D)/2022-R
Particulars of post	Assistant Professor (Male) (Computer Science) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

II. Object Oriented Programming

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

III. Data Structure and Algorithms

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

IV. Database Management Systems

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

V. Computer Communications and Networks

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

VI. Operating Systems

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

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

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

Suggested Reading

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

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

Case No.	F.4-69 (E)/2022-R
Particulars of post	Assistant Professor (Male) (Economics) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

II. Macro Economics

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

III. Public Financing

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

IV. Role of Foreign Trade and Aid in Economic Development

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

V. Major Issues in Pakistan Economy

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

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

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

SUGGESTED READINGS

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

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

Case No.	F.4-69 (F)/2022-R
Particulars of post	Assistant Professor (Male) (English) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (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 th 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.4-69 (G)/2022-R
Particulars of post	Assistant Professor (Male) (International Relations) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (International Relations) (Subjective)**50 Marks**

- I. **International Relations:** History of International Relations: Post WWII Period, Foreign Policy of Pakistan: National Interests and Major Determinations (i-e Size/ Geography, Economic Development, Security, Advancement in Technology, National Capacity, Political Parties/Leadership, Ideology, National Interest, Role of Press/Bureaucracy, Social Structure, Public Opinion, Diplomacy.
- II. **Strategic Approach to International Relation:** War: Causation of War, Total War, Limited War, Asymmetric Warfare, civil war, Guerilla war, Strategic Culture: Determinants of Pakistani Strategic Culture, Deterrence: Theory and practice with special reference to Nuclear India and Pakistan
- III. **International political community:** Nationalism, Internationalism, Globalization
- IV. **International and Regional Organizations:** League of Nation, United Nations, Regional Organizations, EU, ASEAN, NAFTA, SAARC, SCO, OIC, ECO, WTO, Reforms in the United Nations, World Bank and the IMF
- V. **Forms of Government:** Monarchy, Democratic, Dictatorship, Totalitarian/ Authoritarian, Unitary, Federal, Confederation, Presidential and Parliamentary
- VI. **Local Self Government:** Theory and practice of Local Self-Government with special reference to Pakistan, Comparative analyses of systems of local governance, Public Administration and Public Policy
- VII. **Government and Politics in Pakistan:** Constitution making from 1947 -1956, A comparative and critical analysis of 1956, 1962, 1973 Constitutions of Pakistan, Constitutional Amendments up-to-date, Federal structure in Pakistan, and Central-Provincial relations after 18th amendments,

Political Culture of Pakistan, political developments and the Role of civil and military Bureaucracy, Judiciary, feudalism, Dynastic Politics, Political Parties and Interest

Groups, elections and Voting Behavior, Religion and Politics, Ethnicity and National Integration,

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.	International Politics: A Framework for Analysis	Holsti, K.J.
2.	Foreign Policy Making Process: A Case Study of Pakistan	Moonis Ahmar, ed
3.	Pakistan's Foreign Policy : An Historical Analysis	S.M. Burke
4.	Constitutional Developments in Pakistan	G.W.Choudhury,
5.	Pakistan Foreign Policy: An Overview 1947-2004 (PILDAT)	Hasan Askari Rizvi
6.	The Political System of Pakistan,	K.B.Sayeed,
7.	Politics and the State in Pakistan	Muhammad Waseem,
8.	Government and Politics in Pakistan	Mushtaq Ahmad
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.4-69 (H)/2022-R
Particulars of post	Assistant Professor (Male) (Islamic Studies) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (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
- ہتھیبر امن
- مسلخ
- سفارت کار
- معلم انسانیت
- انقلابی رہنما

III. اسلامی تہذیب و ثقافت

⇨ اسلامی تہذیب و ثقافت کے معانی اور اہم اجزا

⇨ سماج اور انسانی شخصیت کی تعمیر میں تہذیب کا کردار

⇨ اسلامی تہذیب کے نمایاں اوصاف:

- توحید
- رسالت

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

.IV. اسلام اور دنیا:

- ↔ اسلامی تہذیب کے مغرب اور مغرب کے اسلامی تہذیب پر اثرات
- ↔ اسلام اور عصر حاضر کے چیلنجز
- ↔ مشرق اور مغرب کے درمیان بات چیت
- ↔ جدید دنیا میں اسلام کا مقام

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

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

SUGGESTED READINGS

S. No.	Title	Author
1.	Islam: its meaning and Message	Khurshid Ahmad
2.	Islam: The Misunderstood Religion	Muhammad Qutub
3.	Towards Understanding Islam	Abul Aala Moudoodi
4.	Ideals and Realities of Islam	Hussain Nasr,
5.	A brief Survey of Muslim Science and Culture	Muhammad Abdur –Rahman
6.	Quranic Sciences	Afzalur Rahman
7.	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.4-69 (I)/2022-R
Particulars of post	Assistant Professor (Male) (Mathematics) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

II. Statics

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

III. Dynamics

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

IV. Ordinary differential equations

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

V. Modern Algebra

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

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

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

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

SUGGESTED READINGS

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

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

Case No.	F.4-69 (J)/2022-R
Particulars of post	Assistant Professor (Male) (Pak Studies) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

- I. Ideology of Pakistan-----definition and elucidation, historical aspects: Muslim rule in the Sub-Continent, its downfall and efforts for Renaissance. Movements for reforms-- Shaikh Ahmad Sarhindi, Shah Waliullah, Sayyid Ahmad Shaheed, Aligarh, Deoband, Nadwah, and other educational institutions-----Sindh Madrassah and Islamia College Peshawar. Ideology of Pakistan in the light of Speeches and statements of Allama Iqbal and Quaid-i-Azam Muhammad Ali Jinnah.
- II. Changing Security Dynamics for Pakistan: Challenges to National Security of Pakistan
- III. Pakistan War on Terror
- IV. Foreign Policy of Pakistan Post 9/11
- V. Evolution of Democratic System in Pakistan
- VI. Hydro Politics ; Water Issues in Domestic and Regional Context
- VII. Pakistan's National Interest
- VIII. Pakistan's Energy Problems and their Effects
- IX. Pakistan's Relations with Neighbours
- X. Pakistan and India Relations Since 1947
- XI. Kashmir Issue
- XII. The war in Afghanistan since 1979 and its impact on, and challenges to Pakistan, in the Post 2014 era.
- XIII. Latest Constitutional Amendments and Important Legislations,
- XIV. The Prevailing Social Problems of Pakistan and the Strategies to Deal with Them, Poverty, Education, Health and Sanitation.

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

I. Development of Curriculum and Instructional Material

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

II. Process of Teaching and Teaching Strategies

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

III. Educational Assessment and Evaluation

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

IV. Research Methods in Education

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

SUGGESTED READINGS

S. No.	Title	Author
1.	Federalism and Ethnic Conflict Regulation in India and Pakistan.	Adeney, Katharine. ,
2.	Labor, Democratization and Development in India and Pakistan.	Candland, Christopher,
3.	Frontline Pakistan: The Struggle with Militant Islam.	Hussian, Zahid.
4.	Modern South Asia: History, Culture, Political Economy.	Jalal, Aisha and Bose, Sugata.,
5.	Back to Pakistan: A Fifty Year Journey.	Mass, Leslie Noyes. Plymouth
6.	Pakistan: Manifest Destiny.	Qureshi, Atiff.
7.	Pakistan, America, and the Future of Global Jihad.	Riedel, Bruce. Deadly Embrace:
8.	Kashmir in Conflict: India, Pakistan and the Unending War.	Schofield, Victoria.
9.	A Brief History of Pakistan.	Wynbrandt, James.
10.	Pakistan's Energy Sector: From Crisis to Crisis-Breaking the Chain	Zaid Alahdad
11.	Research in Education	JW Best
12.	Integrating Education Technology into Teaching	Roblyer
13.	Curriculum Development	S. M. Shahid
14.	Educational Measurement and Evaluation	S. M. Shahid
15.	Educational Administration	S. M. Shahid

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

Case No.	F.4-69 (K)/2022-R
Particulars of post	Assistant Professor (Male) (Physics) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

II. Waves and Oscillation

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

III. Heat and Thermodynamics

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

IV. Electricity and Magnetism

- Gauss' law Electric potential and Poisson and Laplace's equation Dielectric medium and Polarization; Ampere's law; Vector potential; Magnetic properties of matter; Faraday's law of electromagnetic induction; Maxwell's equations;

Poynting theorem and Poynting Vector. Maxwell's equations in integral and differential form.

V. Modern and Quantum Physics

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

VI. Solid State Physics

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

VII. Nuclear Physics

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

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

I. Development of Curriculum and Instructional Material

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

II. Process of Teaching and Teaching Strategies

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

III. Educational Assessment and Evaluation

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

IV. Research Methods in Education

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

SUGGESTED READINGS

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

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

Case No.	F.4-69 (L)/2022-R
Particulars of post	Assistant Professor (Male) (Political Science) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: (Political Science) (Subjective)**50 Marks****I. Political Concept (Western and Islamic):**

Sovereignty, Justice, Law, Liberty, Freedom, Equality, Rights and Duties, Human Rights, Political authority and Power.

II. Comparative Politics:

Political Socialization, Political Culture, Political Development, Political Recruitment, Social Change, Civil Society, Violence and Terrorism in Politics, Gender and Politics, Women Empowerment.

III. Political Participation:

Political Change and Revolution, Elections, Electoral System, Public Opinion, Propaganda, Political Parties, Pressure Groups and Lobbies.

IV. Political Institutions and Role of Government:

Legislature, Executive, Judiciary, Political Elites, Civil-Military and Bureaucracy.

V. Forms of Government:

Monarchy, Democratic, Dictatorship, Totalitarian/Authoritarian, Unitary, Federal, Confederation, Presidential and Parliamentary

VI. Government and Politics in Pakistan:

Constitution making from 1947 -1956, A comparative and critical analysis of 1956, 1962, 1973 Constitutions of Pakistan, Constitutional Amendments up-to-date, Federal structure in Pakistan, and Central-Provincial relations after 18th amendments,

Political Culture of Pakistan, political developments and the Role of civil and military Bureaucracy, Judiciary, feudalism, Dynastic Politics, Political Parties and Interest Groups, Elections and Voting Behavior, Religion and Politics, Ethnicity and National Integration.

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.	Political Thought in Medieval Islam	Erwin I.J. Rosenthal
2.	Modern Islamic Political Thought	Hamid Enayat,
3.	International Politics: A Framework for Analysis	Holsti, K.J.
4.	21 st Century Political Science: A Reference Handbook	John T.Ishiyama, Marijke Breuning,
5.	Political Thought from Plato to Present	Judd Herman,
6.	Government and Politics in Pakistan	Mushtaq Ahmad
7.	Islami Riyasat	Syed Abul Aala Maudoodi
8.	Contemporary Political Philosophy: An Introduction	Will Kymlicka
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.4-69 (M)/2022-R
Particulars of post	Assistant Professor (Male) (Psychology) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

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

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

SUGGESTED READINGS

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

PAPER-II: PROFESSIONAL

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-69 (N)/2022-R
Particulars of post	Assistant Professor (Male) (Urdu) (BS-18), Federal Government Educational Institutions (FGEI) (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. OR M. Phil Degree in the relevant subject with three (3) years post qualification teaching experience at College / University level. OR Second Class or Grade 'C' Master's degree in the relevant subject with five (5) years post qualification teaching experience at College / University level.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

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

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

۴۔ تفصیلاً۵۔ مضمون

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

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

SUGGESTED READINGS

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

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

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

Case No.	F.4-71/2022-R
Particulars of post	Senior Admin Officer (BS-18), Federal Government Educational Institutions (FGEI) (Cantts/Garrisons) Colleges, Ministry of Defence.
Minimum Qualification & Experience:	iii. Second Class or Grade 'C' Master's Degree in Business Administration / Public Administration / Educational Planning and Management (EPM) or equivalent qualification from a University recognized by HEC. iv. Five (5) years post qualification experience of Administration / Management in a Public / Private Organization in BS-17 & above or equivalent.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II & III.

Part-II: 50 Marks (Descriptive)

(Public Administration, Office Management & Professional)

- I. **Public Administration:** Nature and scope, Role of Public Administration in a modern Welfare State;
- II. **Bureaucracy:** Concept of Bureaucracy, Theories of Bureaucracy, Ecology of Bureaucracy; Bureaucracy; of Pakistan as a Change Agent;
- III. **Administrative Leadership:** Approaches to the study of Leadership, Forms of Leadership, Leadership qualities;
- IV. **Administrative Accountability:** Internal and External Controls; Executive Control, Legislative Control, Judicial Control, Ombudsman, Public Opinion and Pressure Groups; Problems of Administrative Accountability in Pakistan;
- V. **Controlling and Co-Ordination:** Forms of Controls, Control Mechanism, the process of Control, Principles of Controlling; Principles Coordination; Machinery for Coordination; Problems of Coordination in Public Administration in Pakistan.
- VI. Civil Servant Act 1973 and Rules made thereunder;
- VII. Rules of Business 1973;
- VIII. Secretariat Instructions and Office Procedures;
- IX. Public Procurement Ordinance and Rules 2004.

Part-III: 25 Marks (Descriptive)

(Human Resource, Financial Management and Quality Management)

I. Human Resource and Financial Management

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

Behaviour and Organizations Administration.—Elements of Financial Administration, Performance Programmed Budgeting, Capital Budget, Principles of Budgeting, Auditing and Accounting.

II. Basic Concept of Quality Management

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

SUGGESTED READINGS

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