

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. 04/2017

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications for Posts	Test Specification	Topics of Syllabi
1.	24/2017	Information Technology Specialist (BS-17) , National Education Assessment System (NEAS), Ministry of Federal Education and Professional Training.	Second Class or Grade 'C' Master's degree in Computer Science/MIT or equivalent qualification recognized by HEC. OR Second Class or Grade 'C' Bachelor's of Engineering in Electrical/ Electronics/ Software Engineering/ Computer Engineering System Engineering.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test = 80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Computer Hardware & Software, , • Data Communication & Networking, • C/C++ Language, • Visual Basic, • Relational Database Management System (RDBMS), • Operating System Unix/Linux • Oracle/PLSQL, • Teaching Techniques and Strategies • Examination & Evaluation of Students.
2.	63/2017	Film Inspector (BS-16) , Central Board of Film Censors, Islamabad, Information & Broadcasting Division, Ministry of Information, Broadcasting & National Heritage.	i. Bachelors Degree. ii. Command in Urdu language. Knowledge of a Provincial Language will be considered as an additional qualification.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II General Intelligence Test = 80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Basic Arithmetic. • Current Affairs. • Pakistan Affairs & Islamic Studies • Everyday/General Science • Note : (Equal weightage for each topic at Part-II)
3.	67/2017	Chief Technical Officer (BS-17) , Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.	i. B.A/B.Sc. ii. Diploma in Printing and Graphic Arts Technology from a recognized Institute. iii. Two (2) years post qualification experience of working in a reputed printing press, in the related field.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test = 80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Elements & Principles of design • Process steps in Graphic Arts Production Chain • Basic Image Processing Methodology • Principles for colour printing • Publication designing and layout • Printing Process of Publication • Creation of Images for print & web • Typography • Lithography • Finishing/Improvement Procedures in Picture by using Adobe Photoshop and CorelDraw

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications for Posts	Test Specification	Topics of Syllabi
4.	68/2017	Assistant Census Commissioner (BS-17), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.	<p>i. Second Class or Grade 'C' Master's degree in Statistics or Second Class or Grade 'C' Master's degree in Economics/ Sociology/ Demography/ Mathematics with Statistics as one paper in Master's degree or Statistics as one subject in Bachelor's degree or Post Graduate Diploma/ certificate in Statistics.</p> <p>ii. Two (2) years post qualification experience of Statistical work in connection with Census and Survey work.</p>	<p>Objective Type Test (MCQ)</p> <p>Part-I English =20 marks</p> <p>Part-II Professional Test = 80 marks</p>	<p>Part-I Vocabulary, Grammar Usage, Sentence Structuring.</p> <p>Part-II</p> <ul style="list-style-type: none"> • Introduction to Statistics, • Presentation of Data, • Measures of Central Tendency, • Measures of Dispersion, • Simple Regression and Correlation, • Sampling Techniques, • Census & Survey Techniques • Testing of Hypothesis, • Techniques of Research, • Report writing and presentation skills • Basic Arithmetic and I.T Knowledge.
5.	69/2017	Geographer (BS-17), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.	<p>i. Second Class or Grade 'C' Master's Degree in Geography.</p> <p>ii. Two (2) years post qualification experience of Geographic/ Cartographic work in a Government/ Semi-Government/ Autonomous Organisation or Two (2) years post qualification experience of teaching Geography in a recognized institution not below Intermediate level.</p>	<p>Objective Type Test (MCQ)</p> <p>Part-I English =20 marks</p> <p>Part-II Professional Test = 80 marks</p>	<p>Part-I Vocabulary, Grammar Usage, Sentence Structuring</p> <p>Part-II (Masters Level)</p> <ul style="list-style-type: none"> • Geography of Pakistan, • Human Geography (Geographic pattern of culture, Ethnicities and Nationalities, Economic Indicators, Social Indicators, Health Indicators, Renewable Resources, Recycling Resources, Sustainable resources. The Demographic Transition) • Political Geography (State, National and the Nation-State Geopolitics of uneven development) • Statistical Geography, • Climatology/Metrology, • Environmental Geography, • GIS Techniques,

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications for Posts	Test Specification	Topics of Syllabi
6.	70/2017	Assistant Director (Admn) (BS-17), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.	i. Second Class or Grade 'C' Master's Degree or equivalent. ii. Three (3) years post qualification experience in Establishment, Administration and Financial Matters on a post equivalent to BPS-16 and above.	Objective Type Test (MCQ) <u>Part-I</u> English =20 marks <u>Part-II</u> Professional Test=80 marks	<u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring <u>Part-II</u> <ul style="list-style-type: none"> • Principles of Management • Civil Servants Act, 1973 and Rules made thereunder • Civil Servants (Appointment, Promotion & Transfer) Rules, 1973 • General Provident Fund Rules. • System of Financial Control and Budgeting, 2006 • Benevolent Fund and Group Insurance Rules. • Government Servants (Efficiency And Discipline) Rules, 1973 • Appeal Rules, 1977. • Rules of Business, 1973 • Public Procurement Rules, 2004 • Basic knowledge of Computer/IT.
7.	71/2017	Deputy Assistant Director (Admn) (BS-16), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.	i. Second Class or Grade 'C' Bachelor's Degree or equivalent. ii. Five (5) years post qualification experience in Establishment, Administration and Financial Matters on a post equivalent to Assistant Incharge/ Assistant.	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"> • Human Resource Management • Civil Servants Act, 1973 and Rules made thereunder • Rules of Business, 1973 • System of Financial Control and Budgeting, 2006 • Public Procurement Rules, 2004 • Basic knowledge of Computer/IT.
8.	81/2017	Assistant Commissioner for Indus Waters (BS-17), Office of the Pakistan Commissioner for Indus Waters, Ministry of Water and Power	Bachelor's degree in Civil Engineering/ Agricultural Engineering, Registration with PEC required or recognized by HEC.	Objective Type Test (MCQ) <u>Part-I</u> English =20 marks <u>Part-II</u> Professional Test=80 marks	<u>Part-I</u> Vocabulary, Grammar Usage, Sentence Structuring <u>Part-II</u> <ul style="list-style-type: none"> • Indus Waters Treaty 1960 and its implementation • Basic knowledge of Indus River System • Basic knowledge of Irrigation System of Pakistan • Hydrology • Basic Hydro-power Engineering • Environmental and technical consideration for site selection • Dam Engineering and Foundation • Concrete Technology & RCC Structural Design • Technical Report Writing

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications for Posts	Test Specification	Topics of Syllabi
9.	82/2017	Assistant Engineer (BS-16), Office of the Pakistan Commissioner for Indus Waters, Ministry of Water and Power.	i. Three (3) years post Matric Diploma in Civil Technology from a Government/ recognized polytechnic Institute. ii. Two (2) years post qualification experience in the field of Designing/ Construction/ Maintenance and operation of Irrigation or River Works.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Indus Waters Treaty 1960 and its implementations • Basic knowledge of Indus River System • Surveying and Leveling; • Soil Mechanics and Foundation • Concrete Technology & RCC Structural Design • Hydrological Cycle
10.	84/2017	Boiler Engineer (BS-17), Remount Veterinary and Farms Corps, Ministry of Defence	i. Three (3) years Diploma in Electrical or Mechanical Engineering from a recognized Institute. ii. 1 st Class Boiler Engineer Certificate. iii. Three (3) years post qualification experience in the relevant field. OR i. 1 st Class Boiler Engineer Certificate. ii. Five (5) years post qualification experience in the relevant field.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 Marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Boiler Mountings, Accessories and Auxiliaries • Draught System of Boilers • Boiler Performance • Steam Engines and Condensers • Boiler Operation & Maintenance • Design Fundamentals of Boiler • Boiler Metallurgy • Boiler Protection and Interlocks • Boiler Controls • Boiler Pollution Control • Liquid Fuel Handling • Solid Fuel Handling
11.	85/2017	Assistant Private Secretary (BS-16), Management Services Wing, Establishment Division.			
12.	88/2017	Assistant Private Secretary (BS-16), National Industrial Relations Commission (NIRC), Ministry of Overseas Pakistanis & Human Resource Development	i. Second Class or Grade 'C' Bachelor's degree from a University recognized by HEC ii. Minimum shorthand speed 100 W.P.M. and typing speed 50 W.P.M. iii. Must be computer literate.	<ul style="list-style-type: none"> • Typing Test with minimum Speed of 50 W.P.M • Shorthand Test with minimum Speed of 100 W.P.M 	50 Marks 50 Marks
13.	89/2017	Assistant Private Secretary (BS-16), Geological Survey of Pakistan, Ministry of Petroleum and Natural Resources.			

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications for Posts	Test Specification	Topics of Syllabi
14.	90/2017	Drilling Engineer (BS-17), Geological Survey of Pakistan, Ministry of Petroleum and Natural Resources.	Second Class or Grade 'C' B.E/B.Sc. degree in Mechanical Engineering or equivalent from a University recognized by the HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring. Part-II <ul style="list-style-type: none"> • Drilling and its Scope • Purpose and uses of Drilling • Classification of Drilling • Type of Drilling • Methods used for Purification of Drilling Fluid • Causes of Circulation Fluid losses and its Prevention • Function of Equipments and Accessories used for Drilling • Types of Mud used for Drilling • Types of Drilling Bits and their functions • Drilling Circulation Fluid: Type, Purpose and Properties.
15.	97/2017	Research Officer (BS-17), Animal Quarantine Department, Ministry of National Food Security and Research.	D.V.M., B.Sc. (Animal Husbandry-Veterinarian). OR B.V.Sc.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test =80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Livestock Industry in Pakistan • Livestock Management Practices • Rangeland Management in Pakistan • Livestock & Poultry Diseases • Veterinary Medicines and Vaccines • Veterinary Microbiology/Virology • Veterinary Parasitology • Animal Nutrition/Physiology • Poultry, Sheep/Goat & Dairy Farming • Chemicals/Lab. Machines and their usage

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16.	99/2017	Veterinary Officer (BS-17), Animal Quarantine Department, Ministry of National Food Security and Research	D.V.M., B.Sc. (Animal Husbandry-Veterinarian). OR B.V.Sc.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test =80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Livestock Industry in Pakistan • Rangeland Management in Pakistan • Livestock & Poultry Diseases • Veterinary Medicines and Vaccines • Veterinary Surgery/Anatomy/Pharmacology • Veterinary Microbiology/Virology • Veterinary Parasitology • Animal Reproduction • Animal Nutrition/Physiology • Epidemiology • Procurement/ arrangement of Chemicals/Lab. Machines and their usage
17.	101/2017	Trained Graduate Teacher (Male) (BS-16), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.	Second Class or Grade 'C' Bachelor's Degree with B.Ed. or equivalent qualification from a university recognized by the HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Basic Arithmetic. • Current Affairs. • Pakistan Affairs & Islamic Studies • Everyday/General Science
18.	102/2017	Trained Graduate Teacher (Female) (BS-16), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.		General Intelligence Test = 40 marks Part-III Professional Test = 40 marks	Part-III <ul style="list-style-type: none"> • Education System in Pakistan, • Educational Psychology, • Class Room Management and Discipline, • Instructional Planning and Teaching Strategies, • Students Evaluation and Examination System, • Educational Guidance and Counselling.

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19.	103/2017	Trained Graduate Science Teacher (Female) (BS-16), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.	Second Class or Grade 'C' B.Sc. Degree with BS. Ed./ B.Ed. or equivalent qualification from a university recognized by the HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II General Science Test = 40 marks Part-III Professional Test = 40 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> Heat, Waves & Electricity, Motion & Force, Gravitational Force, Thermodynamics, Radioactivity, Nature, Properties and States of Matter, Gases, Liquids & Solids. Viruses & Algae Plant anatomy Part-III <ul style="list-style-type: none"> Education System in Pakistan, Educational Psychology, Class Room Management and Discipline, Instructional Planning and Teaching Strategies, Students Evaluation and Examination System, Educational Guidance and Counselling.
20.	104/2017	Trained Graduate Science Teacher (Male) (BS-16), Education Department, Gilgit Baltistan, Ministry of Kashmir Affairs and Gilgit Baltistan.			
21.	112/2017	Prosthetics & Orthotist (BS-17), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence	i. B.Sc. in Orthopedic Technology from a University recognized by HEC. ii. Three (3) years post qualification experience as Prosthetics and Orthotist in Govt. Organization.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test = 80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> CAD/CAM Prosthetics & Orthotics Mayo Electric Upper Limbs Internal Sockets Pressure Measurements High Tech Prosthetic Designing High Tech Orthotics Hydraulic and Microprocessor Knees Reciprocating Gait Orthosis CAD/CAM Insole Designing Assistive Aids
22.	115/2017	Occupational Therapist (BS-17), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence	BS in Occupational therapy from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> Concept of Occupational Therapy and its functions Common Neurological Disorders Role of Occupational Therapy while dealing with the patient with Neurological Conditions Adopted devices and their functions Role of Occupational Therapy in Rehabilitation of Cerebral Palsied Children Role of Occupational Therapy in Activities of Daily Living Occupational Therapy as Supportive Measures Occupational Therapy for Blind and Visually Impaired Occupational Therapy in Geriatrics Occupational Therapy for Children and Adolescents with Psychological Disorders.

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23.	117/2017	Speech Therapist (BS-17), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence.	BS or MS in Speech and Language therapy from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Speech & language development • Articulation • Anatomy of Speech & learning • Stammering • Neurogenic language & communication disorders • Learning disabilities • Communication & Social skills in Children with Autism Spectrum Disorder • Voice Disorder • National Policy for Disabled Persons
24.	119/2017	Social Welfare Officer (BS-17), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence.	Master in Social Work from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Community Organization and Development, • Social Research & Statistics, • Organizational Behaviour and Human Resources, • Social Welfare Policy and Administration, • Criminology and its Remedial Measures, • Methods of Counselling & Guidance Services • Environmental Sociology • Health Policy of the Government
25.	121/2017	Nutritionist (BS-17), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence.	Masters in Nutrition from a University recognized by HEC.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Professional Test=80 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Role of nutrition in relation to health • Classification, Characteristics, Food Sources, Functions and • Nutritional Deficiency Problems • Importance of Balanced diet in relation to health; • Conservation of nutrients in food storage, preparation, and cooking methods • Nutritional needs of adolescents • Digestion, absorption, and metabolism of various nutrients • Nutrition in life cycle • Energy Value of Foods • Current food related health issues. • Malnutrition: Factors responsible for malnutrition in Pakistan and Measures for improvement

Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 included in Consolidated Advertisement No. 04/2017

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.4-65/2017-R
Particulars of post	Joint Census Commissioner (Geography) (BS-19), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.
Minimum Qualification & Experience:	Second Class or Grade 'C' Master's Degree in Geography with twelve (12) years post qualification experience in the field of Geographic/ Cartographic work and delineation work.

Part-I: 50 Marks

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

I. Human Resource and Financial Management

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

II. Basic Concept of Quality Management

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

III. Information Technology and MS Office

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

Part-II: 50 Marks

(Geography)

- I. Geographic patterns of culture, Classification of Languages, Ethnic Conflicts, Factors of Ethnic Cleansing, Ethnic Cleansing in the World, Development Indicators, Economic Indicators, Social Indicators, Health Indicators, Development through Trade, Impacts of development Indicators.
- II. Factors effecting Agriculture, Subsistence Agriculture and population growth, Commercial Agriculture and Market Forces, Sustainable Agriculture, Types and Distribution of Agriculture, Factors of Industrial locations, Distribution of Industries and Industrial Estates, Renewable Resources, Recycling Resources, Sustainable resources.

- III. Factors of Population Growth, Components of Change, Population Structure, The Demographic Transition, Over and under Population threats and their consequences.
- IV. Politics, Geography and Political Geography, State as a Politico-Territorial Phenomenon, State, Nation and the Nation-State, Global patterns in health and diseases, Models in medical geography, Recent issues and developments.

SUGGESTED READINGS

S. No.	Title	Author
1.	Human Resource Management	H.T.Graham & Roger Bennett
2.	Management	James A.F.Stoner, R.Eward Freeman, Daniel R.Gilbert Jr.
3.	Understanding Computer: Today and Tomorrow	Deborah Morley, Charles Parker
4.	MS Office 365 Handbook: 2013 Edition	Kevin Wilson
5.	Text Book of Population Geography,	Dr. Martin Ardagh (2013).
6.	Tourism Geography	Shweta Singh (2013).
7.	Natural Disaster Management: New technologies and opportunities,	Subir Ghosh (2012).
8.	Population Geography	Clarke, J. I. (1965).
9.	Human Geography Cultural Society and Space.	De Blij. H. J. (2003).
10.	Political Geography: The Spatiality of Politics.	Dikshit, R. D. (2001).
11.	Human Geography Landscape of Human Activities.	Getis, Fellman. (2005).
12.	An Introduction to Agricultural Geography. London: Hutchinson.	Grigg, D. (1984).

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

Case No.	F.4-66/2017-R
Particulars of post	Chief Publication Officer (BS-18), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's Degree in Journalism/ Mass Communication. ii. Five (5) years post qualification experience in the Publication of Magazines/ Journals.

Professional Test: 100 Marks**I. Introduction to Mass Communication**

- Concept – Definitions, Need/Importance/Purposes, Types of Communication, Process of Communication, Basic Models.
- Basic models in Mass Communication: -
 - Lasswell's Model (1948)
 - Shannon-Weaver model (1948)
 - Osgood's model (1954)
 - Schramm's model (1954)
 - Newcomb's symmetry theory (1953)
 - Westley-McLean's model (1976)
 - Gerbner model (1956)

II. Mass Communication Theories

- Normative theories of the press: Schramm's four theories and criticism on these theories
- Media as agents of power
- The Spiral of silence
- Media Usage and gratifications
- Media hegemony
- Diffusion of innovations
- Powerful effects model: hypodermic needle, magic bullet theory.
- Moderate effects model: two-step and multi-step flow of communication.
- Powerful media revisited: Marshal McLuhan's media determinism

III. Global / International Communication

- The Historical Context of International Communication
- Globalization, technology, and the mass media
- Communication and Cultural imperialism

- Communication Flow in Global Media: Imbalance in the flow of information between North and South
- McBride commission and its recommendations.
- International Communication in the Internet Age: the new social media and its effects on developing world

IV. Media and Society

- Mass media and social change
- Media freedom and its role for democracy,

V. Mass Media in Pakistan:

- Media system in Pakistan: historical, chronological, and analytical review
- Government-press relations
- 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

VI. Public Relations:

- Concept of Public Relations
- 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

VII. Media Laws and Ethics:

- 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.

SUGGESTED READINGS

S No.	Title	Author
1.	Broadcast Regulations: the German Example	Metzger, Herbert. FES 1993.
2.	Communication Models for The Study of Mass Communication	McQuail, Dennis & Windhal, Swen, Longman, 1982.
3.	Convergence Culture: Where old and new Media	Blackwell publishing Ltd, USA.
4.	Communication Theories: Origins, Methods and Uses in the Mass Media	Werner J. Severin, James W. Tankard Jr. Longman, 1997.
5.	Ethics in Journalism: A Reader on Their Perception in the Third World	Kunczik, Michael (Ed.). FES 1999.
6.	Media And Society into the 21 st Century: A Historical Introduction	Blackwell publishing Ltd, USA.
7.	Media / Impact	Wads Worth/ Thompson Learning, Belmont, CA
8.	News Media and Journalism in Pakistan	Khan, Altaf. LAP Lambert Academic Publishing. June 2011.
9.	Political Communication in Asia,	Routledge, NY.
10.	Precision Journalism: A Reporter's Introduction to Social and Science Methods	Rowman and Littlefield, Lanham, MD.
11.	Writing, Directing, and Producing Documentary Films and Videos	Carbondale: Southern Illinois Press, 2002.
12.	Directing the Documentary	Focal Press, 2004.
13.	Journalism—Principles and Practices	Vistaar Publications 2006
14.	The Hand Book of New Media	London: Sage
15.	Controversies in Contemporary Advertising	Newbury Park: Sage Publications
16.	Public Relations-Writing & Media Techniques	Harper Collins College Publishers

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

Case No.	F.4-72/2017-R
Particulars of post	Deputy Census Commissioner (BS-18), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's Degree in Statistics or Second Class or Grade 'C' Master's degree in Economics/ Sociology/ Demography/ Mathematics with Statistics as one paper in Master's degree or Statistics as one subject in Bachelor's degree or Post Graduate Diploma/ certificate in Statistics.</p> <p>ii. Five (5) years post qualification experience in Supervisory capacity in Census and Sample Surveys.</p>

Part-I: 50 Marks

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

I. Human Resource and Financial Management

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

II. Basic Concept of Quality Management

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

III. Information Technology and MS Office

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

Part-II: 50 Marks

(Professional)

I. Descriptive Statistics

Definition, Importance and scope of Statistics, Presentation of the Data, Tables, Graphs and Charts, Measures of Central Tendency/location, Measures of Dispersion, Measures of Skewness and Kurtosis.

II. Regression Analysis & Correlation Analysis

Concepts of Regression and Correlation and their application, Simple and Multiple Linear Regression (upto three variables), Estimation of the Parameters of simple regression Model, Method of least square,

Correlation, Correlation Coefficient, Properties of Correlation Coefficient, Inference regarding correlation coefficient, Partial Correlation and Multiple Correlation Coefficients (upto three variables).

III. Sampling & Sampling Distributions

Population and Sample, Advantages of Sampling, Sampling Design, Probability & Non-Probability Sampling techniques. Brief Concepts of Simple Random, Stratified, Systematic, Cluster, Multiphase and Multistage Sampling. Non-probability sampling: Purposive, Quota Sampling, Convenience & Accidental Sampling.

Sampling with and without replacement, Application of Central Limit Theorem in Sampling, Sampling Distribution of Mean, difference between two Means, Proportion, difference between two Proportion and Variance.

IV. Statistical Inferences

Hypothesis Testing: Types of errors. Hypothesis Testing for Population Mean. Inferences for difference between Two Population Means. Inferences for the difference between Means of Two Normal Populations using Independent Samples (variances are assumed Equal) for sample size. Inference for Two Populations Mean using Paired Samples. Hypothesis testing for Single Population Proportion and difference between two population proportions. Estimation of sample size

Analysis of categorized data. Goodness of fit tests. Contingency tables. Test of independence in contingency tables.

V. Design of Experiments

One-way and Two-way Analysis of Variance, Design of Experiments, Concepts of Treatment, Replication, Blocking, Experimental Units and Experimental Error, Basic Principles of Design of Experiments, Description, Layout and Statistical Analysis of Completely Randomized Design (CRD), Randomized Complete Block Design (RCBD), Multiple Comparison tests (LSD test).

VI. Population Analysis & Vital Statistics

Population and Demographic Methods, Sources of Demographic data, Basic Demographic Measures, Sex Ratio, Child Women Ratio, Vital Index, Crude and Specific Birth and Death Rates, Total Fertility and Net Reproduction Rates.

VII. Official Statistics

Statistical Systems in Pakistan, Functions of Statistics Division, Bureaus of Statistics and NADRA. The National Income, Gross Domestic Product.

SUGGESTED READINGS

S. No.	Title	Author
1.	Human Resource Management	H.T.Graham & Roger Bennett
2.	Management	James A.F.Stoner, R.Eward Freeman, Daniel R.Gilbert Jr.
3.	Understanding Computer: Today and Tomorrow	Deborah Morley, Charles Parker
4.	MS Office 365 Handbook: 2013 Edition	Kevin Wilson
5.	Principles and Procedures of Statistics	Steel, R and Torrie, J.H.
6.	Introduction to Statistical Theory,	Chaudhry, S.M. and Kamal, S.
7.	Design and Analysis of Experiments	Montgomery, D.C.
8.	Latest Statistical Methods	Vaidyanathan, M.
9.	Statistical Methods	Aggarwal, Y.P.
10.	Mathematical Statistics	Freund, John E.
11.	Demographic Methods	Andrew Hinde

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

Case No.	F.4-73/2017-R
Particulars of post	Assistant Professor (Fine Arts) (Female) (BS-18) , F.G. Colleges, Directorate of Federal Government Educational Institutions (Cantts/Garrisons), Ministry of Defence.
Minimum Qualification & Experience:	Ph.D. Degree in Fine Arts with one (1) year post qualification teaching experience at College/ University level. OR M.Phil Degree in Fine Arts with three (3) years post qualification teaching experience at College/ University level. OR Second Class or Grade 'C' Master's Degree in Fine Arts with five (5) years post qualification teaching experience at College/ University level.

Part-I: (Fine Arts)**50 Marks****I. Drawing**

- Basic design principles, concepts, media and formats.
- Knowledge and skills in the use of basic tools, techniques, and processes

II. Painting

- Basic elements of Art, concepts, media and formats and the ability to apply them to their aesthetic intent.
- Knowledge and skills in the use of basic tools, techniques, and processes

III. Printmaking

- Basic elements of art and design principles, concepts, media, and formats.
- Knowledge and skills in the use of basic tools, techniques, processes, and types of printing presses.

IV. Sculpture

- Basic elements of art and design principles with an emphasis on three-dimensional design, and the ability to apply these principles to a specific aesthetic intent.

V. Ceramics

- Knowledge and skills in the use of basic tools, techniques, and processes.
- Preparation of clay bodies and glazes, kiln stacking procedures, and firing processes
- Knowledge of the history of ceramics

VI. Crafts

- Knowledge and skills in the use of traditional craft techniques, including Islamic Arts,
- Knowledge of various design methods and their relationship to the conceptualization, development, and completion of craft projects.
- Similarities, differences, and relationships among the various craft specializations.

VII. Islamic Calligraphy

- Importance of Calligraphy as Central to Islamic Art and its relationship to the Quran.
- Difference between handwriting and calligraphy, recognizing the purpose of calligraphy as both aesthetic and functional.

VIII. Islamic Arts

- Philosophy of Islamic art in a historical and contemporary context.
- Knowledge of Islamic Art and civilization with emphasis on philosophy, art, architecture, crafts, achievements in various fields and lifestyles.

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

- I. Development of Curriculum and Instructional Material**
 - Elements of Curriculum.
 - Relationship of Education and 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. Educational Administration and Supervision**
 - The Concept of Administration
 - Educational Planning and Organization in Pakistan
 - Approaches to Educational Administration: Democratic; Authoritarian; Laissez-faire
 - Educational Supervision
- V. Research Methods in Education**
 - Scientific Method and its Application in Education
 - Sampling Techniques:
 - Research Instruments: Questionnaire: Interview; Test; Observation; Rating Scale
 - Type of Research: Basic/Applied Research; Historical Research; Descriptive Research; Correlation Research; Causal-Comparative Research; Experimental Research; Action Research; Qualitative and Quantitative Research
 - Research Proposal and Report Writing

SUGGESTED READINGS

S. No.	Title	Author
1.	Printmakers Today,	Jeffrey B. Snyder
2.	Painting In Pakistan,	Hassan, Ijaz ul
3.	Islamic Art & Spirituality,	Nasr, Seyyed Hossein
4.	Sculpture Today	Beaumont, M, et al
5.	Image and Identity.	Akbar Naqvi
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.4-79/2017-R
Particulars of post	Joint Commissioner for Indus Waters (BS-19) , Office of the Pakistan Commissioner for Indus Waters, Ministry of Water and Power.
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.

Professional**100 Marks****1. Concrete Technology**

Constituent materials of concrete & their properties; Hydration, setting & hardening of cement; Testing of cement & aggregates; Types of concrete & their properties; Batching, mixing, transportation & placing of concrete; Properties of fresh and hardened concrete as well as factors affecting them; Testing of concrete for various properties including physical & strength tests.

2. Ultimate strength method

Analysis and Design of prismatic and non-prismatic sections in flexure, compatibility based analysis of sections and code requirements for flexure; Analysis of one-way and two-way solid slabs with general discussion on other slab systems; Design for flexure.

3. Methods of Irrigation

Classification of irrigation methods, Factors affecting the choice of irrigation method, Surface methods, Sprinkler irrigation methods, Sub-surface irrigation methods.

4. Canal Irrigation System

Alluvial and Non alluvial canals; Alignment of canal; Distribution system for canal irrigation, Basic definitions, Determination of required canal capacity, Canal losses, Evaporation, Seepage, Empirical formula for channel losses, Channel section for minimum seepage loss. Cross drainage works.

5. Design of Irrigation Channel

Design of stable channel, Regime Channels, Kennedy's theory, critical velocity ratio, Kutter's formula, Manning's formula, Lacey's theory, Design procedure for Lacey's theory, Estimation of transported sediment, bed load equations, Meyer-peter's and Einstein's formula, Muneer and Qureshi formula, Design procedure for lined/non-erodable irrigation channel, Maintenance of irrigation channels.

6. Reservoir Planning and Dams in General

Types of reservoirs, Flood control reservoir Multi purpose reservoir; Capacity of reservoirs, Storage zones of reservoirs, Reservoir yield, Estimation of demands and optimal reservoir operation, Flooding routing or flood absorption, Reservoir sedimentation, Silt control in reservoir, selection of suitable site for reservoir;

Economics of combined project, Cost-benefit consideration and general principle of optimizing capital budget.

7. Drainage

Purpose of drainage, Drainage needs, Water table, Water movements in subsoil, permeability, Methods of permeability determination.

8. Design of Drainage Systems

Surface drainage, Design of open ditches, Maintenance of alignment Drainage, Open drains, Methods of construction, Subsurface drainage, Tile drains, Mole drains, Determining depth and spacing of drains. Drainage coefficient, Size of the tile drain, Outlets for drains, Envelop material, Installation and maintenance of Tile Drains.

9. Well Irrigation

Aquifers, Types of aquifers, Storage co-effecient, Well- hydraulics, Well losses, Capacity of well, Interference among wells and tube well types and its construction.

10. Canal Lining

Lining and its types, Financial justification and economics of canal lining, Design of lined irrigation channels, Permissible velocities in lined channels, Construction of various types of lining.

11. Indus Waters Treaty 1960 and its implementation

SUGGESTED READINGS

S. No.	Title	Author
1.	Design of Reinforced Concrete Structures	Hassoun, M.N.
2.	Reinforced Concrete Design	Wang, C.K. & Charles G.S.
3.	Irrigation and Drainage	Sharma, R.K. and T.R.Sharma,
4.	Water Resources Engineering	Linslay, R.K. and Joseph, B.F.

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

Case No.	F.4-80/2017-R
Particulars of post	Deputy Director (Admn) (BS-18), Office of the Pakistan Commissioner for Indus Waters, Ministry of Water and Power
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's degree in Business Administration (Human Resources/Finance)/ Economics/ Public Administration.</p> <p>ii. Five (5) years post qualification experience of dealing with administration and Establishment matters in responsible position in BS-17 in a Government or Semi-Government/ Public or Private Organization.</p>

Part-I: 50 Marks

(Public Administration & Office Management)

- 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. **Planning:** Types of Plans, Planning Process; Principles of Planning, Planning Machinery in Pakistan;
- VI. **Controlling and Co-Ordination:** Forms of Controls, Controls, Control Mechanism, the process of Control, Principles of Controlling; Principles of Coordination; Machinery for Coordination; Problems of Coordination in Public Administration in Pakistan.
- VII. Civil Servant Act 1973 and Rules made thereunder;
- VIII. Rules of Business 1973;
- IX. Secretariat Instructions and Office Procedures;
- X. PPRA Ordinance and Rules 2004.

Part-II: 50 Marks

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

I. Human Resource and Financial Management

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

II. Basic Concept of Quality Management

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

III. Information Technology and MS Office

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

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.
7.	Understanding Computer: Today and Tomorrow	Deborah Morley, Charles Parker
8.	MS Office 365 Handbook: 2013 Edition	Kevin Wilson

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

Case No.	F.4-83/2017-R
Particulars of post	Joint Census Commissioner (BS-19), Pakistan Bureau of Statistics, Statistics Division, Ministry of Finance, Revenue, Economics Affairs, Privatization & Statistics.
Minimum Qualification & Experience:	<p>i. Second Class or Grade 'C' Master's Degree in Statistics or Second Class or Grade 'C' Master's degree in Economics/ Sociology/ Demography/ Mathematics with Statistics as one paper in Master's degree or Statistics as one subject in Bachelor's degree or Post Graduate Diploma/ Certificate in Statistics.</p> <p>ii. Twelve (12) years post qualification experience in supervisory capacity in Census and Sample Survey.</p>

Part-I: 50 Marks

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

I. Human Resource and Financial Management

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

II. Basic Concept of Quality Management

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

III. Information Technology and MS Office

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

Part-I: 50 Marks

(Professional)

I. Descriptive Statistics

Definition, Importance and scope of Statistics, Presentation of the Data, Tables, Graphs and Charts, Measures of Central Tendency/location, Measures of Dispersion, Measures of Skewness and Kurtosis.

II. Regression Analysis & Correlation Analysis

Concepts of Regression and Correlation and their application, Simple and Multiple Linear Regression (upto three variables), Estimation of the Parameters of simple regression Model, Method of least square,

Correlation, Correlation Coefficient, Properties of Correlation Coefficient, Inference regarding correlation coefficient, Partial Correlation and Multiple Correlation Coefficients (upto three variables).

III. Sampling & Sampling Distributions

Population and Sample, Advantages of Sampling, Sampling Design, Probability & Non-Probability Sampling techniques. Brief Concepts of Simple Random, Stratified, Systematic, Cluster, Multiphase and Multistage Sampling. Non-probability sampling: Purposive, Quota Sampling, Convenience & Accidental Sampling.

Sampling with and without replacement, Application of Central Limit Theorem in Sampling, Sampling Distribution of Mean, difference between two Means, Proportion, difference between two Proportion and Variance.

IV. Statistical Inferences

Hypothesis Testing: Types of errors. Hypothesis Testing for Population Mean. Inferences for difference between Two Population Means. Inferences for the difference between Means of Two Normal Populations using Independent Samples (variances are assumed Equal) for sample size. Inference for Two Populations Mean using Paired Samples. Hypothesis testing for Single Population Proportion and difference between two population proportions. Estimation of sample size

Analysis of categorized data. Goodness of fit tests. Contingency tables. Test of independence in contingency tables.

V. Design of Experiments

One-way and Two-way Analysis of Variance, Design of Experiments, Concepts of Treatment, Replication, Blocking, Experimental Units and Experimental Error, Basic Principles of Design of Experiments, Description, Layout and Statistical Analysis of Completely Randomized Design (CRD), Randomized Complete Block Design (RCBD), Multiple Comparison tests (LSD test).

VI. Population Analysis & Vital Statistics

Population and Demographic Methods, Sources of Demographic data, Basic Demographic Measures, Sex Ratio, Child Women Ratio, Vital Index, Crude and Specific Birth and Death Rates, Total Fertility and Net Reproduction Rates.

VII. Official Statistics

Statistical Systems in Pakistan, Functions of Statistics Division, Bureaus of Statistics and NADRA. The National Income, Gross Domestic Product.

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.	Principles and Procedures of Statistics	Steel, R and Torrie, J.H.
6.	Introduction to Statistical Theory,	Chaudhry, S.M. and Kamal, S.
7.	Design and Analysis of Experiments	Montgomery, D.C.
8.	Latest Statistical Methods	Vaidyanathan, M.
9.	Statistical Methods	Aggarwal, Y.P.
10.	Mathematical Statistics	Freund, John E.
11.	Demographic Methods	Andrew Hinde

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

Case No.	F.4-86/2017-R
Particulars of post	Physician Psychiatry (BS-19), Federal Government Polyclinic, Capital Administration and Development Division.
Minimum Qualification & Experience:	i. MBBS or equivalent qualification recognized by Pakistan Medical and Dental Council ii. Postgraduate higher diploma in the requisite speciality with seven (7) years clinical experience in the requisite speciality OR Postgraduate lower diploma in the requisite speciality with 10 years post qualification clinical experience in the requisite speciality.

Part-I: (Qualification Based)**50 Marks**Core courses of **MBBS Degree****Part-II: (Professional)****50 Marks**Core courses of Post Graduate Lower Diploma in **Psychiatry**.

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

Case No.	F.4-91/2017-R
Particulars of post	Deputy Director (BS-18), Directorate of Dock Workers Safety, (Regional Office) Gwadar, Ministry of Ports and Shipping.
Minimum Qualification & Experience:	i. Bachelor's degree in Mechanical or Electrical Engineering. ii. Five (5) years post qualification experience in testing appliances/ inspection of loading/ discharging of cargo on ports in Semi Government/ Government Organization. iii. Knowledge of Labour Laws, Dock Labourers Act and the Pakistan Dock Labourers Regulations.

**Part-I: 50 Marks
(Engineering)****I. 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, Difference between Engineering and 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.

II. 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.

III. Electrical Machines

DC Motors: Shunt, Series and Compound Motors, Speed and Torque Relations. Transformers: Principle, Construction, Voltage transformation ratio, Step-up/ step-down transformers, Copper & Iron Losses, Transformer connections; delta and star. AC Motors: Induction motor, Synchronous motor, Performance, Efficiency. Single phase and three phase Motors.

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

Part-II: 50 Marks
(Administration/Professional)

I. Human Resource and Financial Management

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

II. Basic Concept of Quality Management

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

III. Information Technology and MS Office

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

IV. Laws about Ports and Shipping

Labour Laws, Dock Labourers Act, Pakistan Dock Labourers Regulations

SUGGESTED READINGS

S. No.	Title	Author
1.	Fluid mechanics with engineering applications	Finnemore/ Franzini.
2.	Schaum Outline Series; Strength of Materials	Williym A. Nash
3.	Fluid Mechanics	Lewitt
4.	Manufacturing Processes for Engineering Materials	Kalpakgjian
5.	Electrical Technology	B.L. Tharaja
6.	Electronic Devices and Circuits.	Bogart
7.	DC Machines	P.C. Sen
8.	Semiconductors	Manzar Saeed
9.	Human Resource Management	H.T.Graham & Roger Bennett
10.	Management	James A.F.Stoner, R.Eward Freeman, Daniel R.Gilbert Jr.
11.	Understanding Computer: Today and Tomorrow	Deborah Morley, Charles Parker
12.	MS Office 365 Handbook: 2013 Edition	Kevin Wilson

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

Case No.	F.4-98/2017-R
Particulars of post	Quarantine Officer (BS-18), Animal Quarantine Department, Ministry of National Food Security and Research
Minimum Qualification & Experience:	i. Second Class or Grade 'C' Master's degree in any specialty of Veterinary Science with basic degree in Animal Husbandry or Veterinary Science. ii. Five (5) years post qualification field experience.

Professional**100 Marks****I. Livestock Economics and Business Management**

Share of Livestock Poultry Dairy Industry in Pakistan Economy, Employment opportunities in Livestock Poultry Milk and Meat production system in Pakistan and their Economics. Financial and Economic analysis of agro Livestock Business, Business ethics and social responsibility.

II. Cardiovascular, Respiratory and Renal Physiology

Introduction to Physiology, Branches and its scope. Cell, Cardiovascular System, Circulatory Physiology, Respiratory System, Renal Physiology, Urine formation, Introduction to acid –base Physiology

III. Poultry Production

Importance, history, present status and future perspectives of poultry industry; classification of poultry breeds and varieties; brooding, rearing and production practices in poultry; rural vs commercial poultry production; introduction to various body systems of the chicken; composition of poultry meat and eggs.

IV. General Microbiology

Definition of Microbiology, Introduction to genetic engineering, Introduction to fungi, molds and yeasts. Fundamental characteristics of viruses (Definition and general properties of viruses; methods of studying viruses; purification of viruses and determination of virus size. Method for isolation and identification of viruses.

V. Animal Breeding and Genetics

Chemical basis of inheritance. Genetic basis of inheritance, cell division. Mendelism, monohybrid and polyhybrid crosses. Additive and non-additive gene action. Polygenic inheritance, pleiotropy, linkage, crossing over and chromosomal mapping. Expression and interaction of gene. Mutation, lethal and sub-lethal genes. Emerging genetic technologies.

VI. Animal Feed Resources & Forage Conversation

Feed resources of Pakistan for poultry, Availability trends of feedstuffs, Feeding practices in livestock farming, Scope for improving fodder production, Forage crops conservation, Advantages and disadvantages of hay making.

VII. Principles of Animal Nutrition

Basic terms used in animal nutrition, Composition of animal body and plants and its interaction, Classification of nutrients, Water, its importance and functions, Factors governing water requirements of livestock and poultry.

VIII. Immunology

Introduction to immunity, types of immunity, immunization, types and procedures of immunization; Passive and active immunization, Standard Operational procedures, Types and characteristics of vaccines, subunit vaccines, DNA vaccines, Failures in vaccination, adverse consequences of vaccination, Administration of Vaccines, vaccination schedules, monitoring of vaccinated animals.

IX. General Medicine

General systemic states, Diseases of alimentary system, Diseases of hepatobiliary system, Diseases of cardiovascular system, Diseases of cardiovascular system, Diseases of haematopoietic & haemolymphatic system, Diseases of respiratory system, Diseases of urinary system, Diseases of nervous system, Diseases of musculoskeletal system, Diseases of skin

X. Beef Production

Scope and importance of meat production in Pakistan, Present situation of meat industry and Problems of meat industry in Pakistan, Important meat & dual purposes breeds of Buffalo and cattle, Beef Production Systems, Feeding of beef Animals, Breeding of beef Animals, Management of Beef Animals, Meat Hygiene, Storage and Preservation of Meat, Marketing of beef animals and beef, Modern Slaughter Houses, Slaughtering Methods.

XI. Dairy Production

Principles of profitable dairy enterprise, Factors affecting milk quality and yield, Housing for dairy animals, Hygienic milk production, Importance of record keeping, Methods of record keeping, Common disease problems and prevention.

XII. Animal Breeding Plans and Policies

Role of animal breeding. Selection methods and kinds. Various system of breeding; Inbreeding, line breeding, out-breeding, out-crossing, crossbreeding, grading up. Traits of economic importance in cattle, buffalo, sheep/goat and poultry. Animal genetic resources. National breeding policy. Constraints and future breeding plans. Emerging breeding technologies. Role of breed registry societies/associations in developed countries and its application in Pakistan.

XIII. Meat and Slaughter By-Products Technologies

Halal Slaughtering methods, Hygienic production, and Handling of meat, Essentials of meat quality, Factors influencing meat quality, Meat evaluation for quality, Slaughterhouse wastes management.

SUGGESTED READINGS

S. No.	Title	Author
1.	Understanding Business.	Nickels G.W., McHugh M.J. and McHugh Susan.
2.	Manual of Physiology-1.	Zia-ur-Rahman, B. Aslam, J. A. Khan and T. Khaliq (2007).
3.	Textbook of Medical Physiology.	Guyton, A. C. and J. E. Hall. (2006).
4.	Poultry Production.	Austic, R.E. and M.C. Nesheim. 1990.
5.	Veterinary Diagnostic Virology.	Cstro, A.E. and W.F. Henschele, 1992.
6.	Schaum's Outline of Genetics.	Elrod, S. 2001.
7.	Concepts of Genetics.	Klung, W.S. and M.R. Cummings, 2006.
8.	Feeds and Feeding.	Perry, T.W., A.E. Cullison and R.S. Lowrey. 1999.
9.	Essentials of Clinical Immunology.	Helen, C., M. Haeney, S. Misbahand N. Snowden, 2006.
10.	Veterinary Medicine,	Radostitis, O.M., C.C. Gay, K.W. Hincheliff and P. D. Constable. 2007.
11.	The Merck Veterinary Manual.	Cynthia M. Kahn and Scott Line 2005.
12.	The rumen; Digestive Physiology and Feeding Management.	Sarwar, M. and C.S. Ali. 2000.
13.	Meat Production and Technology in Pakistan,	Alvi, A.S. 1991.
14.	Meat Hygiene and Inspection.	Anwar, A.H. 1996.
15.	Health and Husbandry of Dairy Animals.	Khan, B.B. (Editor). 2008.
16.	Understanding Animal Breeding	Bourdon, R.M. 2000.
17.	The Meat We Eat.	Romans, J.R. and P.T. Ziegler, 1994.

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

Case No.	F.4-106/2017-R
Particulars of post	Senior Biomedical Engineer (BS-18), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence
Minimum Qualification & Experience:	i. BE Bio Medical/ Mechatronics from a University recognized by HEC. ii. Five (5) years post qualification experience (one (1) year experience in Milling Machine and CAD CAM technology and four (4) years in Bio Medical/ Mechatronics Engineering).

Professional**100 Marks****1. Human Anatomy:**

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

2. Biomechanics

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

3. Bio-Instrumentation

- **Biological Systems:** Study of various Physiological systems, related biopotentials and physiological parameters.
- **Diagnostic Equipment:** invasive and noninvasive measurement techniques and related equipments.
- **Cardiovascular Measurements:** Electrocardiography, Measurement of Blood pressure, Blood flow and Cardiac output.

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

4. Rehabilitation Engineering:

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

SUGGESTED READINGS

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

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

Case No.	F.4-107/2017-R
Particulars of post	Pathologist (BS-18), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence.
Minimum Qualification & Experience:	i. MBBS with FCPS from CPSP. ii. Five (5) years post FCPS experience in Govt. Organization as Pathologist.

Part-I: (Qualification Based)**50 Marks**Core courses of **MBBS Degree****Part-II: (Professional)****50 Marks**Core courses of FCPS with reference to **Pathology**.

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

Case No.	F.4-108/2017-R
Particulars of post	Senior Psychologist (BS-18), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence
Minimum Qualification & Experience:	i. Master in Psychology from a University recognized by HEC. ii. Five (5) years post qualification experience as Psychologist in Govt. Organization.

Professional**100 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. **Sensation and Perception:** Sensory process through sense organs, Perception, Gestalt Principles, Binocular and Monocular cues, Illusions and Extra Sensory Perception, Determinants of Perception
- IV. **Learning and Memory:** Nature and Forms of Learning, Types of learning: Classical and Operant Conditioning, Reinforcement, Extinction, Discrimination, Punishment, Observational Learning, Theories of Learning, Types of Memory, Process of Memory, Forgetting, Theories of Memory
- V. **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.
- VI. **Psychological Assessment:** Attributes of Psychological Measures, Validity, Reliability, Item Analysis, Norms, Modern Test Theory, Selection and Training, Educational and Clinical Assessment, Ethical Standards and Legal Issues
- VII. **Personality:** Determinants of Personality, Factors in Development of Personality, Theoretical Perspectives, Traits and Types, Personality Assessment and Techniques, Cross-Cultural Issues.
- VIII. **Intelligence:** Theories of Intelligence, Types of intelligence (IQ, EQ), Assessing Intelligence
- IX. **Social Influence and Group Dynamics:** Social Facilitation, Attribution, Conformity, Obedience, Altruism, Attitudes, Social Norms.
- X. **Developmental Psychology:** Physical, Cognitive, Social and Emotional development in Childhood, Adolescence, Adulthood and Old Age

- XI. Abnormal and Clinical Psychology:** Concept and causes of Abnormality, Clinical Assessment and Intervention, Different disorders such as Schizophrenia, Mood disorder, Anxiety disorder, Personality disorder, etc. Psychological treatment including different Therapeutic techniques.
- XII. Organizational/Industrial Psychology:** Leadership styles, Decision making, Work motivation, Organizational Culture, Stress and Conflict at Work and its Management, Organizational Socialization, Job related Attitude, Sexual Harassment, Glass Ceiling, Human Computer interaction.
- XIII. Health Psychology:** Beliefs and Behaviour, Models of Health Psychology, Assessment and Intervention, Models of Stress, Chronic and Terminal Illness, Role of Social Support.

SUGGESTED READINGS

S. No.	Title	Author
1.	Applied Industrial/Organizational Psychology	Aamodt, M.
2.	Introduction to Psychology	Atkinson R. C., & Smith, E. E
3.	Social Psychology	Baron, R. A
4.	Introduction to Psychology: Gateways to Mind and Behavior	Coon, D., & Mitterer, J.
5.	Development Across the Life Span	Feldman, R.
6.	Foundation of Psychology	Hayes, N
7.	Abnormal Psychology	Kring, A. M
8.	Psychology	Myers, D. G.
9.	Psychology: Concepts and Connections	Rathus, S.
10.	Organizational Psychology	Singh, P.

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

Case No.	F.4-110/2017-R
Particulars of post	Radiologist (BS-18), Armed Forces Institute of Rehabilitation Medicine, Ministry of Defence.
Minimum Qualification & Experience:	i. MBBS with FCPS in Radiology from CPSP. ii. Five (5) years post FCPS experience as Radiologist in a Government Organization.

Part-I: (Qualification Based)**50 Marks**Core courses of **MBBS Degree****Part-II: (Professional)****50 Marks**Core courses of FCPS with reference to **Radiology**