

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. 14/2023

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
1.	237/2023	Cardiac Perfusionist (BS-17) , AFIC / NIHD, Ministry of Defence.	Second Class or Grade 'C' Master's Degree in Biological Sciences or equivalent qualification from a University recognized by HEC OR Second Class or Grade 'C' Bachelor's Degree (16 years education) in Cardiac Perfusion or equivalent qualification 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"> • Cardiovascular Anatomy • Cardiovascular Physiology • Cardiovascular Microbiology • Cardiovascular Haematology • Congenital Heart Disease and Surgical Treatment • Acquired Heart Disease and Surgical Treatment • The theoretical foundations of techniques and equipment for CPB • Function, principles, problems, appropriate use of various devices associated with CPB
2.	238/2023	Inspector (Legal) (BS-16) , Anti Narcotics Force, Ministry of Narcotics Control.	Second Class or Grade 'C' Bachelor's Degree in Law or equivalent qualification recognized by the HEC.	Objective Type Test (MCQ) 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"> ▪ Investigation Chapter of Criminal Procedure Code, ▪ Basic knowledge of "Qanun-e-Shahadat Order", 1984 ▪ Basic knowledge of Pakistan Penal Code, ▪ Basic knowledge of Narcotics Substances Act, 1997 ▪ International Conventions and Agreements on Drug Control. ▪ Role of United Nations Organization for Drug Control (UNODC) ▪ Role of Pakistan's Anti Narcotics Control Setup in Drug Control ▪ Money Laundering

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
3.	239/2023	National Savings Officer (BS-17) , Central Directorate of National Savings, Ministry of Finance.	Second Class or Grade 'C' Master's Degree in Economics/ Statistics/ Commerce/ Accounting / Finance/ Business Administration/ Public Administration/ Cost and Management Accountant/ Chartered Accountant/ Administrative Sciences/ Management Sciences or equivalent qualification from University recognized by HEC.	Objective Type Test (MCQ) 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"> • Functions of National Savings Organization • Basic Accounting • Basic Auditing • Basic Public Finance • Basic Arithmetic (Rate, Ratios, Percentages, Compound Interest etc.) • Basic I.T. Knowledge
4.	240/2023	Assistant Accounts Officer (BS-17) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.	i. Second Class or Grade 'C' Master's degree in Business Administration (Finance/ Accounting) or equivalent from a University recognized by HEC. ii. The selected candidates would be confirmed only after having passed SAS/PIPFA (Public Sector).	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"> • Accounting Principles & Procedures, • Scrutiny of Record for Audit Purpose, • Journal, ledger & Cash Book, • Preparation of Annual Budget, • Adjustment & Depreciation, • Financial Planning & Cost Accounting, • Head of Accounts, • Re-appropriation of Accounts • Supplementary Grants, • Public Procurement Rules, 2004 • Basic IT Knowledge
5.	245/2023	Assistant Engineer (Civil) (BS-17) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.	i. Second Class or Grade 'C' Bachelor's degree in Civil Engineering from a University recognized by the PEC ii. Registration with the PEC as a Professional Engineer.	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"> • Soil Mechanics & Foundation Engineering • Surveying & Levelling • Costing and Estimation • Construction Management • Building Material & Building Construction • Structural Design Applications • Concrete Technology & R.C.C Structure Design • Preparation of PC-1 for Infrastructure Projects • Project Management & Supervision. • Basic IT/Computer Knowledge

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
6.	246/2023	Physiotherapist (BS-17) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.	i. Second Class or Grade 'C' Master's or Bachelor's (4 years duration) degree in Physiotherapy or equivalent qualification from a University recognized by the PMDC/HEC. ii. Two (02) years post qualification experience in Physiotherapy from a recognized Hospital.	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"> • Musculoskeletal Physical Therapy • Cardiopulmonary Physical Therapy • Paediatrics Physical Therapy • Neurological Physical Therapy • Sports Physical Therapy • Electrotherapy & Actinotherapy • Biomechanics and Kinesiology • Physiotherapy Skills & Techniques • Therapeutic Exercises & Techniques
7.	247/2023	Medical Technologist (BS-17) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.	Second Class or Grade 'C' Master's degree in Medical Technology/ Bio Chemistry/ Microbiology or equivalent from a University recognized by the Higher Education Commission.	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"> • Medical Technology • Microbiology • Biochemistry • Immunology • Basic Genetics • Quality Control
8.	248/2023	Instructor English (Female) (BS-17) , Government Polytechnic Institute for Women, Ministry of Federal Education & Professional Training.	Second Class or Grade 'C' Master's degree in English or an equivalent qualification from a recognized University.	Objective Type Test (MCQ) Part-I English = 20 marks Part-II Subject Test = 50 marks Part-III Professional Test = 30 marks	Part-I Vocabulary, Grammar Usage, Sentence Structuring Part-II (Masters Level) <ul style="list-style-type: none"> • English Literature 16th to 20th Century. • Linguistics. • English Language Teaching. • Syntax. • Diction. Part-III <ul style="list-style-type: none"> • Teaching Techniques and Methodology, • Classroom Management and Discipline, • Testing and Evaluation • Knowledge of Bloom's Taxonomy

S. No	Case No. F.4-	Particulars of Post(s)	Qualifications/Experience for the Posts	Test Specification	Topics of Syllabi
9.	249/2023	Staff Nurse (BS-16) , Directorate General of Special Education, Ministry of Human Rights.	Three (3) years Post Matric diploma in Nursing and one (1) year diploma in Midwifery for females/one year Specialization diploma for males duly registered by the Pakistan Nursing Council.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test=80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Basic Medical Sciences • General Nursing • Ward Administration • Hospitality of the Patients • Care vs. Cure for Health Management
10.	250/2023	Charge / Staff Nurse (BS-16) , Federal Government Polyclinic, Islamabad, Ministry of National Health Services, Regulations & Coordination.	i. Registered Nurse and Registered Midwife with PNC. ii. For Male on year course/ certificate in nursing related field in lieu of midwifery.	Objective Type Test (MCQ) Part-I English =20 marks Part-II Professional Test=80 marks	Part-I Grammar Usage, Sentence Structuring Part-II <ul style="list-style-type: none"> • Basic Medical Sciences • General Nursing • Ward Administration • Hospitality of the Patients • Care vs. Cure for Health Management

**Schemes and Syllabi for Written Examination (Descriptive) for Posts in
BS-20 advertised under Consolidated Advertisement No. 14/2023**

Case No.	F.4-242/2023-R																																					
Particulars of post	<p>Professor (BS-20), Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations and Coordination. Categories are as follows:-</p> <table border="1"> <thead> <tr> <th>S.No.</th> <th>Categories</th> <th>Respective Subjects/ Specialties</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>Anesthesia</td> <td>Anesthesia</td> </tr> <tr> <td>B</td> <td>Cardiac Surgery</td> <td>Cardiac Surgery</td> </tr> <tr> <td>C</td> <td>Dermatology</td> <td>Dermatology</td> </tr> <tr> <td>D</td> <td>Emergency Medicine</td> <td>Emergency Medicine</td> </tr> <tr> <td>E</td> <td>General Surgery</td> <td>Surgery</td> </tr> <tr> <td>F</td> <td>Neonatology</td> <td>Neonatology</td> </tr> <tr> <td>G</td> <td>Nephrology</td> <td>Nephrology</td> </tr> <tr> <td>H</td> <td>Neurosurgery</td> <td>Neurosurgery</td> </tr> <tr> <td>I</td> <td>Pathology</td> <td>Hematology/ Histopathology/ Micro Biology/ Chemical Pathology</td> </tr> <tr> <td>J</td> <td>Pediatric Surgery</td> <td>Pediatric Surgery</td> </tr> <tr> <td>K</td> <td>Pulmonology</td> <td>Pulmonology</td> </tr> </tbody> </table>		S.No.	Categories	Respective Subjects/ Specialties	A	Anesthesia	Anesthesia	B	Cardiac Surgery	Cardiac Surgery	C	Dermatology	Dermatology	D	Emergency Medicine	Emergency Medicine	E	General Surgery	Surgery	F	Neonatology	Neonatology	G	Nephrology	Nephrology	H	Neurosurgery	Neurosurgery	I	Pathology	Hematology/ Histopathology/ Micro Biology/ Chemical Pathology	J	Pediatric Surgery	Pediatric Surgery	K	Pulmonology	Pulmonology
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K	Pulmonology	Pulmonology																																				
Minimum Qualification & Experience	<p>(i) MBBS or equivalent Medical qualification recognized by PMDC. OR M.Sc. of a recognized University in case of Basic Science in the relevant subject (for non-medical graduates). (ii) D.Sc., Ph.D., FCPS., M.D., M.S., M.Phil etc. in the respective subjects. FCPS/ M.D. with D.P.H. (for Public Health Institutions only). OR Equivalent qualification recognized by PMDC. POST QUALIFICATION EXPERIENCE: Three years teaching experience as an Associate Professor in the respective subject provided that total experience as Assistant Professor / Associate Professor is not less than eight years in a postgraduate institute. OR Nine years as Assistant Professor or four years teaching experience as Associate Professor in under graduate institute provided that total experience as Assistant Professor/ Associate Professor is not less than twelve years in under graduate institute. RESEARCH: Must have produced at least two research papers during three years as Associate Professor provided that total research papers as Assistant Professor/ Associate Professor are not less than five. OR At least three research papers during Associate Professorship provided that total research papers as Assistant Professor/ Associate Professor are not less than seven if experience is in under Graduate Medical college. NOTE: (a) For all Basic Science subjects a non-medical is eligible provided a medical graduate with requisite qualification is not available. (b) For appointment as a Professor, candidates possessing a D.Sc. / Ph.D. degree, the thesis or major subjects/ courses should be related to the subject in which they are appointed. (c) Candidates without a basic medical qualification are eligible for appointment as Professor provided they possess at least D.Sc. / Ph.D. degree and provided a medical graduate with the requisite qualification is not available.</p>																																					

PAPER: PROFESSIONAL (100 MARKS)

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

OR

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

Schemes and Syllabi for Written Examination (Descriptive) for All Posts in BS-18 & BS-19 (except the posts of Doctors) included in Consolidated Advertisement No. 14/2023

PAPER-I: ENGLISH

Max Marks: 100

Time Allowed: 3 Hours

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

SUGGESTED READINGS

Sr. No.	Title	Author
1.	English Grammar in Use	Raymond Murphy
2.	Practical English Usage	M. Swan
3.	Practical English Grammar and Composition	S.C. Gupta
4.	Improve your Punctuation & Grammar	Marion Field
5.	The Little, Brown Handbook	H. Ramsey Flower & Jane Aaron
6.	A University English Grammar	R. Quirk & S. Greenbaum
7.	Write Better, Speak Better	Readers Digest Association
8.	Modern English in Action	Henry Christ
9.	Exploring the World of English	Syed Saadat Ali Shah

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

Case No.	F.4-235/2023-R
Particulars of post	Assistant Professor (Islamiyat) (BS-18) , Naval Headquarters, Ministry of Defence.
Minimum Qualification & Experience	i. Second Class or Grade 'C' Master's Degree in relevant subject. ii. Five (5) years post qualification teaching experience at College level in the relevant subject. <p style="text-align: center;">OR</p> M.Phil with three (3) years post qualification teaching experience at College level in the relevant subject. <p style="text-align: center;">OR</p> Ph.D. in the relevant subject.

Part-I: 25 Marks (MCQ)

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

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

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

II. Study of Seerah

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

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

III. Islamic Civilization and Culture:

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

IV. Islam and World

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

I. اسلامی ضابطہ حیات

⇨ اسلامی نظام کی نمایاں خصوصیات:

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

⇨ سرکاری ملازمین کی ذمہ داریاں

II. سیرت النبی کا مطالعہ

⇨ سیرت النبی کے مطالعہ کی اہمیت اور ضرورت بطور:

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

III. اسلامی تہذیب و ثقافت

⇨ اسلامی تہذیب و ثقافت کے معانی اور اہم اجزا

⇨ سماج اور انسانی شخصیت کی تعمیر میں تہذیب کا کردار

⇨ اسلامی تہذیب کے نمایاں اوصاف:

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

IV. اسلام اور دنیا:

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

⇨ اسلام اور عصر حاضر کے چیلنجز

⇨ مشرق اور مغرب کے درمیان بات چیت

⇨ جدید دنیا میں اسلام کا مقام

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

- I. Development of Curriculum and Instructional Material
- Elements of Curriculum.

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

II. Process of Teaching and Teaching Strategies

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

III. Educational Assessment and Evaluation

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

IV. Research Methods in Education

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

SUGGESTED READINGS

S. No.	Title	Author
1.	Islam: its meaning and Message	Khurshid Ahmad
2.	Islam: The Misunderstood Religion	Muhammad Qutub
3.	Towards Understanding Islam	Abul Aala Moudoodi
4.	Ideals and Realities of Islam	Hussain Nasr,
5.	A brief Survey of Muslim Science and Culture	Muhammad Abdur –Rahman
6.	Quranic Sciences	Afzalur Rahman
7.	Tahzeeb o Tamaddon e Islami	Rasheed Akhter Nadvi
8.	Islamic Civilization: Foundations Belief & Principles	Abul A' la Mawdudi
9.	Research in Education	JW Best
10.	Integrating Education Technology into Teaching	Roblyer
11.	Curriculum Development	S.M. Shahid
12.	Educational Measurement and Evaluation	S.M. Shahid
13.	Educational Administration	S.M. Shahid

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

Case No.	F.4-236/2023-R
Particulars of post	General Staff Officer, Grade-II (Bio Medical Tech) (Radio Pharmacist/ Radio Chemist) (BS-18) , Armed Forces Institute of Radiology and Imaging, Ministry of Defence.
Minimum Qualification & Experience	i. Second Class or Grade 'C' Master's Degree in Pharmacy or equivalent qualification from a University recognized by HEC/PCP. ii. Five (5) years post qualification working experience at PET-CT radiopharmaceutical production lab at any renowned functional PET-CT setup.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

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

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

II. Facility Layout

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

III. Radiopharmaceuticals

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

IV. Operational Levels of Nuclear Pharmacy

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

V. Methods of Radiolabelling of Radiopharmaceuticals

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

VI. Concept on PET/CT Radiopharmaceuticals (FDG)

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

SUGGESTED READINGS

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

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

Case No.	F.4-243/2023-R
Particulars of post	Deputy Director (Engineering) (BS-18) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.
Minimum Qualification & Experience	i. Second Class or Grade 'C' Bachelor's degree in Civil Engineering from a University recognized by the PEC. ii. Five (5) years post qualification experience in civil engineering related work from a Government/ Semi- Government/ Autonomous Body/ Public or Private Sector Organization of repute. iii. Registration with the PEC as a Professional Engineer.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

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

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

II. Environmental Engineering:

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

III. Fundamentals of Hydraulic Engineering:

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

IV. Costing, Accounting and Budgeting:

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

V. Project Management:

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

VI. Inventory Management:

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

VII. Quality Management Systems:

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

SUGGESTED READINGS

S.No.	Title	Author
1.	Properties of Concrete	A.M. Neville.
2.	Plain and reinforced concrete	Nilson.
3.	Strength of material	Andrew Pytel and Singer.
4.	Transportation Engineering, Planning and design	Paul Wright.
5.	Civil Engineer's Reference Book	LS Blake
6.	Surveying and Leveling	T.P Kanetaker.
7.	Public Health Engineering	STEEL.
8.	Fluid mechanics with engineering applications	Finnemore/ Franzini.
9.	Handbook of Engineering Management	Dennis Lock.
10.	Total Quality Management	Dale H. Besterfield, Carol Besterfield-Michna, Glen H. Besterfield, Mary Gesterfield-Sacre

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

Case No.	F.4-244/2023-R
Particulars of post	Boiler Engineer (BS-18) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.
Minimum Qualification & Experience	i. Second Class or Grade 'C' Bachelor's degree in Mechanical/ Electrical Engineering or equivalent qualification from a University recognized by HEC. ii. First Class Certificate of Competency as Boiler Engineer from any recognized Government Institute. iii. Five (5) years post qualification practical experience in the relevant field in a recognized Hospital/ Firm.

Part-I: 25 Marks (MCQ)

- 25 MCQ Questions on Part-II.

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

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

II. Electrical Machines

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

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

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

III. 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.

Heat and Thermodynamics : Perfect gas and Vander Waals equation; Three Laws of Thermodynamics, internal energy, temperature, entropy. Thermal properties of Simple system production and measurement of low temperatures; kinetic theory of gases; Maxwellian distribution of molecular velocities; Brownian motion, Transport phenomena. Classical Maxwell-Boltzmann Statistics and its application; Quantum Bose—Einstein and Fermi—Dirac Statistics.

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

IV. Boilers Management

Fundamental Design of Boiler, Boiler Mountings, Accessories and Auxiliaries, Draught System of Boilers, Boiler Performance, Steam Engines and Condensers, Boiler Operation & Maintenance, Boiler Safety, Boiler Metallurgy, Boiler Protection and Interlocks, Boiler Controls, Boiler Pollution Control, Liquid/Solid Fuel Handling

SUGGESTED READINGS

S. No.	Title	Author
1.	Electrical Technology	B.L. Theraja
2.	DC Machines	P.C. Sen
3.	Semiconductors	Manzar Saeed
4.	Fluid mechanics with engineering applications	Finnemore/ Franzini.
5.	Schaum Outline Series; Strength of Materials	William A. Nash
6.	Fluid Mechanics	Lewitt
7.	Manufacturing Processes for Engineering Materials	Kalpakjian
8.	Boiler Operator's Hand Book	Ken Heselton
9.	Boiler Operator's Guide	Ray Wohlfarth & Anthony L. Kohan

FEDERAL PUBLIC SERVICE COMMISSION
(Curriculum & Research Wing)

Schemes and Syllabi for Written Examination (Descriptive) for All Posts of Doctors in BS-18 & BS-19 included in Consolidated Advertisement No. 14/2023

PAPER-I: MBBS (Common for all posts of Doctor in BS-18 & 19)

Max Marks: 100

Time Allowed: 3 Hours

Part-I: (MCQ)

25 Marks

25 MCQ Questions on Part-II

Part-II: (Qualification Based) (Descriptive)

75 Marks

Core courses of **MBBS Degree**

PAPER-II: PROFESSIONAL

Max Marks: 100

Time Allowed: 3 Hours

Case No.	F.4-241/2023-R
Particulars of post	Nuclear Physician (BS-18) , Pakistan Institute of Medical Sciences (PIMS), Islamabad, Ministry of National Health Services, Regulations & Coordination.
Minimum Qualification & Experience	<ul style="list-style-type: none"> i. MBBS or equivalent Medical qualification recognized by PM&DC. ii. PM&DC Level III/ Level II (a) or (b) qualification in respective subject or other equivalent qualifications recognized by PM&DC. iii. Two (2) years post qualification experience with Level III qualification. OR Four (4) years post qualification experience with Level II (b) qualification. OR Five (5) years post qualification experience with Level II (a) qualification in the relevant field recognized by PM&DC.

Part-I: (MCQ)

25 Marks

25 MCQ Questions on Part-II.

Part-II: (Professional) (Descriptive)

75 Marks

Core courses of Specialization in **Nuclear Physician**