

Advt No. 13 of 2024

For the Post of Junior Scientific Officer

Plan of Written Examination

All the aspirants are informed as under with respect to the written test to be conducted for the recruitment for the post of Junior Scientific Officer in

Advt No. 13 of 2024:-

1. The Exam will be conducted in MCQ (Multiple Choice Questions) format. OMR sheet will be used for answering the questions.
2. The Exam would be of 2 hours duration.
3. The Exam will consist of two parts (Part A and Part B) as follows:-

Part	Topic	No. of Questions	Marks (Each Question carries 1 mark)	Type of Questions
A	Questions from General Knowledge and Current Affairs, Punjab History and Culture, Logical Reasoning and Mental ability, Punjabi, English, ICT, (Annexure-1)	40	40	MCQs (Multiple Choice Questions)
B	Questions from the Subject (Annexure-2)	80	80	MCQs (Multiple Choice Questions)
Total		120	120	

4. **There will be negative marking. Each question carries 1 mark. For every wrong answer, 1/4th mark i.e. 0.25 mark would be deducted. The question(s) not attempted will receive no credit or discredit.**
5. For the post of Care Taker Part B contains questions from the subjects mentioned as per Annexure-2
6. Tentative syllabus for the written examination for the recruitment of Junior Scientific Officer is annexed below:

Annexure - 1

**Part A - General Knowledge, Punjab History and Culture, Logical Reasoning
Mental Ability, Punjabi, English and ICT.**

Sr. No.	Indicative Contents of Syllabus	Weightage (Approx.)
1.	<p>General Knowledge and Current affairs of National and International importance including:</p> <ul style="list-style-type: none"> (i) Polity issues, (ii) Environment issues, (iii) Current Affairs, (iv) Science and Technology, (v) Economic issues, (vi) History of India with special reference to Indian freedom struggle movement. (vii) Sports, (viii) Cinema and Literature. (ix) Geography 	10
2.	<p>Punjab History and Culture:- Physical features of Punjab and its ancient history. Social, religious and economic life in Punjab. Development of Language & literature and Arts in Punjab, Social and culture of Punjab during Afgan/Mughal Rule, Bhakti Movement, Sufism, Teachings/History of Sikh Gurus and Saints in Punjab. Adi Granth, Sikh Rulers, Freedom movements of Punjab.</p>	5
3.	<p>Logical Reasoning & Mental Ability:</p> <ul style="list-style-type: none"> (i) Logical reasoning, analytical and mental ability. (05 Marks) (ii) Basic numerical skills, numbers, magnitudes, percentage, numerical relation appreciation. (03 Marks) (iii) Data analysis, Graphic presentation charts, tables, spreadsheets. (02 Marks) 	10
4.	<p>ਪੰਜਾਬੀ:- ਸ਼ੁੱਧ-ਅਸ਼ੁੱਧ, ਸ਼ਬਦਜੋੜ, ਅਗੇਤਰ ਅਤੇ ਪਿਛੇਤਰ, ਸਮਾਨਾਰਥਕ/ਵਿਰੋਧੀਸ਼ਬਦ, ਨਾਂਵ, ਪੜਨਾਂਵ ਅਤੇ ਕਿਰਿਆ ਦੀਆਂ ਕਿਸਮਾਂ ਤੇ ਸਹੀ ਵਰਤੋਂ, ਲਿੰਗ ਅਤੇ ਵਚਨ, ਪੰਜਾਬੀ ਅਖਾਣ ਤੇ ਮੁਹਾਵਰੇ, ਅੰਗਰੇਜੀ ਤੋਂ ਪੰਜਾਬੀ ਅਨੁਵਾਦ ਅਤੇ ਬਹੁਤੇ ਸ਼ਬਦਾਂ ਦੀ ਥਾਂ ਇੱਕ ਸ਼ਬਦ ਆਦਿ।</p>	5
5.	<p>English:- Basic Grammar, Subject and Verb, Adjectives and Adverbs, Synonyms, Antonyms, One Word Substitution, Fill in the Blanks, Correction in Sentences, Idioms and their meanings, Spell Checks, Adjectives, Articles, Prepositions, Direct and Indirect Speech, Active and Passive Voice, Correction in Sentences, etc.</p>	5
6.	<p>ICT:- Basics of computers, Network & Internet, Use of office productivity tools Word, Excel, Spreadsheet & PowerPoint.</p>	5
	Maximum Marks	40

Part-B

Number of Questions - 80

Maximum Marks- 80

1. Basic Science:

Redox and Complex metric, acid base titrations, Calibrations of volumetric kits, Preparation/standardization of solutions. Basic knowledge of Electro Chemistry; Electro Chemical reactions, non-equilibrium electro chemistry; Ions in Solution; Handling of chemical and analysis involving safety and hygiene in the Lab; Determination of errors in Chemical analysis. Knowledge of titrimetric method of analysis involving types of titrations, concentration system (Molarity, molality normality, mole fraction) Basic knowledge of gravimetric & thermal methods of analysis; Knowledge of Bio-monitoring. Green Chemistry. Nanomaterials, photochemistry, thermodynamics, chemical kinetics, synthetic and natural polymers.

2. Biological Science: -

Principles of living organisms; Elements of living organisms; Biomolecules Carbohydrates, Lipids, Proteins, Nucleic acid and vitamins, Classification of biomolecules; Structure and functions of various biomolecules. General Micro- Biology Involving observations of microbes, Microbial growth, control of microorganisms. Microbial ecology and Water Microbiology etc.; toxicity testing, toxicity of pesticide/metals. Determination of pot ability of water following MPN Method (E Coliform & F Coliform)

3. Environment Science:-

Basic concept of environment- lithosphere, hydrosphere, atmosphere and biosphere. Cause, Effects and Control measures of Air Pollution, Water Pollution, Soil Pollution, Marine Pollution, Noise Pollution, Thermal Pollution and Microbial Pollution. Disaster Management floods, earthquake, cyclone and landslides. Ecological interactions: commensalism, amensalism, symbiosis, parasitism and predation.

4. Climate Change:-

Carbon trading, Montreal Protocol, Kyoto Protocol, Carbon credits, Role and functions of IPCC, National and International action plan on climate change. Environment convention and protocols, Conference on Parties (COP) on Environment, Sustainable development. Precautionary Principle, Polluter pays principle.

5. Environment Laws:-

IFA 1927, WLPA 1972, FCA 1980, Biological Diversity Act 2002, Forest Rights Act, 2006. Strategies for conservation-Project Tiger, Elephant, Rhino, Snow leopard. Ramsar Sites, Water Act 1974, Environment (Protection) Act, coastal Zone regulations, Legal Framework on Air Pollution Air Act, 1981, National Green Tribunal and Environmental Impact Assessment, Management and Legislation.

6. Mathematical Science:

Measures of central tendency: Mean, Median and Mode, Statistical methods; mean deviation; standard deviations, type of errors, uncertainty, precision and knowledge of statistically evaluation of data.

7. Instrumentation and Chemical Analysis:

Measurement of water quality parameters: sampling and analysis for pH, EC, turbidity, TDS, hardness, chlorides, salinity, DO, BOD, COD, nitrates, phosphates, sulphates, heavy heavy metals and organic contaminants. Measurements technique, Spectroscopy (UV-Visible, infrared, NMR. and mass), Ion chromatography & Ion selective electrode measurement technique, Emission and Atomic Absorption spectroscopy, Solid Phase extraction techniques, Chromatographic analysis (Gas Chromatography and HPLC), industrial Process Analyzers, Air Pollution control and emission measurement techniques.