



PUNJAB PUBLIC SERVICE COMMISSION

BARADARI GARDEN, PATIALA-147001

WEBSITE: www.ppsc.gov.in

PUBLIC NOTICE

RECRUITMENT FOR THE POSTS OF ASSISTANT GEOLOGISTS AND MINING OFFICERS IN THE DEPARTMENT OF INDUSTRIES AND COMMERCE, GOVT. OF PUNJAB

1.0 This is for information of the candidates who have applied for the posts of Assistant Geologists and Mining Officers in the Department of Industries and Commerce, Govt. of Punjab that a Combined Objective type Test for recruitment to these posts shall be conducted as per the following schedule :-

Date : 1st February, 2014 (Saturday)

Time : 02:00 P.M. to 04: 00 P.M.

2.0 The scheme of the test is as under:

Objective Type Test	-	300 Marks
Interview	-	40 Marks
Grand Total	-	340 Marks

3.0 The examination centre(s) shall be in Patiala and information of the same shall be mentioned on Admit Cards of all candidates. Details regarding the Admit cards shall be given shortly on the website of the Commission.

4.0 All candidates who have applied for ibid post(s) have been declared "provisionally eligible" for appearing in the test.

5.0 The scrutiny of application forms shall be done after the conduct of test. During the process of scrutiny, the application forms and other relevant documents, certificates, etc of the candidates shall be examined to determine their eligibility as on the last date of submission of online application forms.

6.0 Thereafter, candidates not more than three times the number of posts, category wise (in their order of merit) shall be short-listed for appearing in the interview. However, this number shall be subject to variation if two or more candidates at the last number (the number at the end) get equal marks, then all of them shall be considered for appearing in the interview (subject to eligibility), warranting the corresponding increase in the stipulated ratio.

7.0 Interviews for both the posts shall be done separately.

8.0 The salient features of the written test shall be as follows:-

- (a) There shall be 100 objective type multiple choice questions.
 - i) General Studies- 30 questions
 - ii) Geology - 70 questions
- b) The standard of questions in General Studies portion would be to test the knowledge and general awareness as is expected of a person who has attained education at least up to graduation level. The standard of questions in Geology portion would be of graduation degree level.
- (c) The duration of test will be two hours.
- (d) All questions will carry equal marks (three marks each).
- (e) There will be no negative marking.

****Important Note for the Common candidates:** The candidates who have applied for both the posts i.e. Assistant Geologist and Mining Officers, their score in the combined objective type test shall be counted for both the posts subject to their relative merit vis-à-vis each post.

9.0 a) **The General Studies portion of the test** will include questions related to the following broad fields of knowledge:-

- (i) General awareness about the State- Punjab
- (ii) Indian Society, History & Culture, Polity, Geography, Economy, Human Development Indices and the Development Programmes;

(iii) Everyday science and recent trends in Science and Technology,

(iv) Basic concepts of Ecology and Environment;

(v) Current Affairs of National and International importance

Note: The topics listed above are only indicative for the general guidance of the candidates and cannot be deemed as exhaustive list.

b) **The Geology portion of the test** will include questions related to the following:

1. General Geology:

The Solar System, Meteorites, Origin and interior of the earth and age of earth; Volcanoes- causes and products, Volcanic belts; Earthquakes- causes, effects, Seismic zones of India; Island arcs, trenches and mid-ocean ridges; Continental drifts; Seafloor spreading, Plate tectonics; Isostasy.

2. Geomorphology and Remote Sensing:

Basic concepts of geomorphology; Weathering and soil formations; Landforms, slopes and drainage; Geomorphic cycles and their interpretation; Morphology and its relation to structures and lithology; Coastal geomorphology; Applications of geomorphology in mineral prospecting, civil engineering; Hydrology and environmental studies; Geomorphology of Indian subcontinent.

Aerial photographs and their interpretation-merits and limitations; The Electromagnetic spectrum;

Orbiting satellites and sensor systems; Indian Remote Sensing Satellites; Satellites data products;

Applications of remote sensing in geology; The Geographic Information Systems (GIS) and Global Positioning System (GPS) - its applications.

3. Structural Geology:

Principles of geologic mapping and map reading, Projection diagrams, Stress and strain ellipsoid and stress-strain relationships of elastic, plastic and viscous materials; Strain markers in deformed rocks; Behaviour of minerals and rocks under deformation conditions; Folds and faults classification and mechanics; Structural analysis of folds, foliations, lineations, joints and faults, unconformities; Time relationship between crystallization and deformation.

4. Paleontology:

Species- definition and nomenclature; Megafossils and Microfossils; Modes of preservation of fossils; Different kinds of microfossils; Application of microfossils in correlation, petroleum exploration, paleoclimatic and paleoceanographic studies; Evolutionary trend in Hominidae, Equidae and Proboscidae; Siwalik fauna; Gondwana flora and fauna and its importance; Index fossils and their significance.

5. Indian Stratigraphy:

Classification of stratigraphic sequences: lithostratigraphic, biostratigraphic, chronostratigraphic and magnetostratigraphic and their interrelationships; Distribution and classification of Precambrian rocks of India; Study of stratigraphic distribution and lithology of Phanerozoic rocks of India with reference to fauna, flora and economic importance; Major boundary problems- Cambrian/Precambrian, Permian/Triassic, Cretaceous/Tertiary and Pliocene/Pleistocene; Study of climatic conditions, paleogeography and igneous activity in the Indian subcontinent in the geological past; Tectonic framework of India; Evolution of the Himalayas.

6. Hydrogeology and Engineering Geology:

Hydrologic cycle and genetic classification of water; Movement of subsurface water; Springs; Porosity, permeability, hydraulic conductivity, transmissivity and storage coefficient, classification of

aquifers; Water-bearing characteristics of rocks; Groundwater chemistry; Salt water intrusion; Types of wells; Drainage basin morphometry; Exploration for groundwater; Groundwater recharge; Problems and management of groundwater; Rainwater harvesting; Engineering properties of rocks;

Geological investigations for dams, tunnels highways, railway and bridges; Rock as construction material; Landslides-causes, prevention and rehabilitation; Earthquake-resistant structures.

7. Mineralogy:

Classification of crystals into systems and classes of symmetry; International system of crystallographic notation; Use of projection diagrams to represent crystal symmetry; Elements of X-ray crystallography.

Physical and chemical characters of rock forming silicate mineral groups; Structural classification of silicates; Common minerals of igneous and metamorphic rocks; Minerals of the carbonate, phosphate, sulphide and halide groups; Clay minerals. Optical properties of common rock forming minerals; Pleochroism, extinction angle, double refraction, birefringence, twinning and dispersion in minerals.

8. Igneous and Metamorphic Petrology:

Generation and crystallization of magmas; Crystallization of albite-anorthite, diopside-anorthite and diopside-wollastonite-silica systems; Bowen's Reaction Principle; Magmatic differentiation and assimilation; Petrogenetic significance of the textures and structures of igneous rocks; Petrography and petrogenesis of granite, syenite, diorite, basic and ultrabasic groups, charnockite, anorthosite and alkaline rocks; Carbonatites; Deccan volcanic province.

Types and agents of metamorphism; Metamorphic grades and zones; Phase rule; Facies of regional and contact metamorphism; ACF and AKF diagrams; Textures and structures of metamorphic rocks;

Metamorphism of arenaceous, argillaceous and basic rocks; Minerals assemblages Retrograde metamorphism; Metasomatism and granitisation, migmatites, Granulite terrains of India.

9. Sedimentary Petrology:

Sediments and Sedimentary rocks: Processes of formation; diagenesis and lithification; Clastic and non-clastic rocks-their classification, petrography and depositional environment; Sedimentary facies and provenance; Sedimentary structures and their significance; Heavy minerals and their significance; Sedimentary basins of India.

10. Economic Geology:

Ore, ore minerals and gangue, tenor of ore, classification of ore deposits; Process of formation of minerals deposits; Controls of ore localization; Ore textures and structures; Metallogenic epochs and provinces; Geology of the important Indian deposits of aluminium, chromium, copper, gold, iron, lead, zinc, manganese, titanium, uranium and thorium and industrial minerals; Deposits of coal and petroleum in India; National Mineral Policy; Conservation and utilization of mineral resources; Marine mineral resources and Law of Sea.

11. Mining Geology:

Methods of prospecting geological, geophysical, geochemical and geobotanical; Techniques of sampling; Estimation of reserves of ore; Methods of exploration and mining metallic ores, industrial minerals, marine mineral resources and building stones; Mineral beneficiation and ore dressing.

12. Geochemistry and Environmental Geology:

Cosmic abundance of elements; Composition of the planets and meteorites; Structure and composition of Earth and distribution of

elements; Trace elements; Elements of crystal chemistry—types of chemical bonds, coordination number; Isomorphism and polymorphism; Elementary thermodynamics.

Natural hazards—floods, mass wasting, costal hazards, earthquakes and volcanic activity and mitigation; Environmental impact of urbanization, mining, industrial and radioactive waste disposal, use of fertilizers, dumping of mine waste and fly ash; Pollution of ground and surface water, marine pollution; Environment protection—legislative measures in India; Sea level changes: causes and impact.

Date: 23/12/2013

Sd/-
Secretary
Punjab Public Service Commission