Professional Geophysicist
Examination Test Plan 2026

Definition of Professional Geophysics:

“Geophysics” refers to that science which involves study of the physical earth by means of measuring its natural and induced fields of force, including, but not limited to, electric, gravity, and magnetic, and its responses to natural and induced energy and the interpreting of these measurements and the relating of them to the physics of the earth.

This area of practice is structured into three primary content areas:

I. Project Planning and Coordination (34%)
II. Methods and Data Collection (33%)
III. Data Processing, Analysis, Interpretation, and Presentation (33%)

BPELSG Professional Geophysicist (PGP) Test Plan

I. Project Planning and Coordination 34%

Professional Activities:

1. Determine applicability of proposed geophysical methods for projects by evaluating targets of interest and project objectives
2. Identify the site characteristics, activities, and schedule considerations that may impact the geophysical investigation, including nearby areas (e.g., geology, infrastructure, cultural features, site history)
3. Select geophysical investigation methods in accordance with site conditions, geology, equipment, targets of interest, project objectives, and applicable regulations
4. Identify the capabilities and limitations of the planned geophysical approach
5. Identify and evaluate environmental hazards, operational hazards, scheduling restrictions, and public safety concerns related to geophysical work
6. Develop quality assurance (QA) and quality control (QC) plans and procedures

Test questions on these professional activities may include one or more of the following:

A. Geophysical investigation and deployment methods and their applications

B. Methods used to estimate geologic and geophysical parameters

C. Sources of existing geologic, geophysical, and other relevant data

D. Noise sources that affect geophysical data quality

E. How site conditions relate to the geophysical project (e.g., geology, infrastructure, terrain, weather, cultural activities)

F. Geophysical characteristics that differentiate targets from their surroundings

G. Magnetic measurement methods: applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

H. Seismic measurement methods (e.g., active and passive, surface wave analysis, seismic refraction/reflection, ground vibration analysis, seismic tomography): applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

I. Earthquake seismology: applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

J. Gravity measurement methods: applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

K. Electrical measurement methods (e.g., resistivity, self potential, induced polarization): applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

L. Electromagnetic measurement methods (e.g., VLF, GPR, TDEM, FDEM, MT): applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

M. Heat flow and thermal measurement methods: applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

N. Radiological measurement methods: applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

O. Borehole geophysical methods (e.g., seismics, electrical, neutron, gamma, NMR): applications, limitations, and appropriate quality assurance (QA)/quality control (QC)

P. Safety risks associated with geophysical methods

Q. Alquist-Priolo Earthquake Fault Zoning Act

R. California Building Code related to site classification (Vs30)

S. Methods for minimizing interference and instrument error when collecting geophysical data

II. Methods and Data Collection — 33%

Professional Activities:

1. Determine the field layout for data collection
2. Document site conditions, field data collection parameters, and deviations from the work plan
3. Initialize, calibrate, and set recording parameters on geophysical instruments
4. Verify that geophysical data has been collected in accordance with applicable standards and work plans
5. Verify the geophysical data is reasonable and representative

Test questions on these professional activities may include one or more of the following:

A. Environmental impacts (e.g., geology, infrastructure, terrain, weather, cultural activities) on geophysical data quality

B. The evaluation of quality control (QC) results for compliance with project requirements

C. Basic field techniques (e.g., map reading, grid layout, compass use, GPS and positioning systems, positioning corrections) and their applications for geophysical projects

D. Methods for data collection and their impact on data quality (e.g., signal sources including active and passive, data acquisition techniques and configurations)

E. Magnetic instrumentation: set-up, field procedures, acquisition, and documentation

F. Seismic instrumentation: set-up, field procedures, acquisition, and documentation

G. Earthquake seismology instrumentation: set-up, field procedures, acquisition, and documentation

H. Gravity instrumentation: set-up, field procedures, acquisition, and documentation

I. Electrical instrumentation: set-up, field procedures, acquisition, and documentation

J. Electromagnetic instrumentation: set-up, field procedures, acquisition, and documentation

K. Heat flow and thermal instrumentation: set-up, field procedures, acquisition, and documentation

L. Radiological instrumentation: set-up, field procedures, acquisition, and documentation

M. Geophysical borehole instrumentation: set-up, field procedures, acquisition, and documentation

III. Data Processing, Analysis, Interpretation, and Presentation — 33%

Professional Activities:

1. Process geophysical data using appropriate techniques (e.g., applying filters, positioning)
2. Analyze geophysical data using appropriate principles (e.g., incorporating geologic and engineering considerations, choosing appropriate filters and modeling)
3. Interpret geophysical results by integrating other data (e.g., geology, site conditions and field observations, aerial photogrammetry, InSAR and LiDAR, historical records) and considering project objectives
4. Prepare technical documents to communicate the methods, findings, and limitations
5. Present work product and deliverables in compliance with legal standards and requirements

Test questions on these professional activities may include one or more of the following:

A. Magnetic data: processing, analysis, interpretation, and presentation (e.g., diurnal corrections, filtering, geologic and infrastructure effects)

B. Seismic data: processing, analysis, interpretation, and presentation (e.g., normal moveout corrections, velocity analysis, elevation correction)

C. Earthquake seismology data: processing, analysis, interpretation, and presentation (e.g., filtering, station corrections, magnitude)

D. Gravity data: processing, analysis, interpretation, and presentation (e.g., terrain, free air, Bouguer)

E. Electrical data: processing, analysis, interpretation, and presentation (e.g., electrode array types and spacings)

F. Electromagnetic data: processing, analysis, interpretation, and presentation (e.g., time domain, frequency domain, skin depth)
G. Heat flow and thermal data: processing, analysis, interpretation, and presentation (e.g., heat flow units, groundwater effects, regional geology)
H. Radiological data: processing, analysis, interpretation, and presentation (e.g., subtraction of background)
I. Geophysical borehole data: processing, analysis, interpretation, and presentation
J. Geophysical modeling techniques and their limitations
K. Methods for evaluating error and uncertainty