

Examrace

Praxis II Middle School Science Exam by ETS

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The exam is aimed for those individuals who wants to teach science at the middle school level. Two hours will be provided to complete 90 MCQs and 3 short answer essay questions. The short essay questions will cover physical sciences, life sciences and earth and space science. There will be 90 multiple choice questions pertaining to science, technology and society, 18 pertaining to earth or space sciences, 18 pertaining to life sciences, 22 pertaining to physical sciences, 14 pertaining to basic principles of science and 9 questions pertaining to scientific history, techniques, and methodology.

Short Essay Questions: There will be one question pertaining to earth and space sciences, one pertaining to life sciences, and one pertaining to physical sciences. The first question will test your ability to identify and formulate scientific concepts, and use models to explain concepts and natural phenomena. The second question will test your ability to describe a field or laboratory demonstration that would illustrate a fundamental concept of science, design an investigation or experiment that would test a hypothesis, and analyse and interpret data from an experiment. The third question will test your ability to identify and explain patterns and cycles of natural systems and, analyze the relationships between segments of a natural system. One of these three questions will test your knowledge of the relationship between science, society and technology.

Science, Technology and Society: This section will focus on your knowledge of the economic, social, political and ethical issues of human technologies such as prenatal testing, prolonging life, cloning and their impact on human affairs will be tested. Questions pertaining to the application of science and technology to daily life pertaining to energy production and storage, consumer products, natural resources, nutrition and public health issues will be covered in this section.

Earth and Space Sciences: This section will test your knowledge of astronomy, meteorology, oceanography, historical geology and physical geology. Questions in the astronomy section will cover asteroids, comets, the solar system, the sun, the lifecycle of stars, units of distance, and theories pertaining to the origin and structure of the universe. Questions in the meteorology section, will cover how humans are affected by climates, local and regional factors that affect climate, weather forecasting, air circulation, frontal systems, high and low-pressure systems, air masses, temperature, cloud formation, precipitation, humidity, frost, atmospheric conditions, global wind belts, seasonal and latitudinal variations of solar radiation, the chemical composition of the atmosphere and atmospheric layers. The oceanography questions will cover the influences on chemical and physical properties of seawater, topography, land forms of the ocean floor, shore lines,

surface and deep water currents of the oceans, factors that influence tides and the geographic locations of oceans and seas.

Questions under historical geology will include the sequence of events in the earth's history, the geological time scale, the formation of fossils, relative and absolute time, stratigraphy, and the principle of uniformitarianism. Questions under physical geology will cover the process of weathering erosion, deposition, the Hydrological cycle, plate tectonic theory, earthquakes, volcanoes, and folding and faulting of the earth, the physical features of layers of the earth, classification of different types of minerals, soils and rocks and the process of mineral and formation of rock.

Life Sciences: This section will test your knowledge of ecology, plants, animals, diversity of life, evolution, genetics and the cell. Questions in the ecology section will test your knowledge of types and features of biomes, bio geo-chemical cycles, energy flow, stability and instability of the ecosystem, succession, intraspecific relationships and interspecific relationships such as mutualism, parasitism, and commensalism and; social behaviors such as altruism, dominance, territoriality and population dynamics. Question pertaining to animals will cover homeostasis, animal responses to stimuli, the anatomy and physiology of organisms in the animal kingdom along with reproduction and development, the endocrine system, immunity, the nervous and musculoskeletal systems, respiration, excretion, digestion, and circulation of organisms in the animal kingdom. Questions pertaining to plants will cover asexual and sexual reproduction, water and nutrient transport systems, hormones, tropisms, photoperiods, the structure and function of leaves, stems, and the components of vascular and nonvascular plants. Questions pertaining to diversity of life will cover the viruses, animals, plants, bacteria, fungi, protists, the classification system of phylum, class, order, family, genus, and species. Questions pertaining to evolution will cover the scientific hypotheses for the origin of life, and evidence that supports the theory of evolution. The genetics questions will cover protein synthesis, genetic mutations, DNA replication and, the construction and usage of recombinant DNA, Your knowledge of the interaction between the environment and heredity, genetic and chromosomal aberrations that result in human genetic disorders, the Mendelian inheritance model, and aspects of non-Mendelian inheritance will be tested in this section of the exam. Questions pertaining to this cell will cover mitosis and meiosis, photosynthesis and the chemical reactions of respiration, cytokinesis and a cell cycle, eukaryotic and prokaryotic cells and the functions of organelles.

Chemistry: This section of the exam will cover physics and chemistry. Questions of chemistry will focus on solutions and solubility, chemical reactions, states of matter and the kinetic theory, chemical bonding, the mole and periodicity. Your knowledge of pH and buffers, physical and chemical properties of salts, bases, and acids, the effect of pressure and temperature on solubility of a solute, solvents and the dissolving process will be tested. In the chemical reactions section your knowledge of electrochemistry; the effect of concentration, pressure, temperature and catalysts on chemical reactions; exothermic and endothermic chemical reactions and balancing chemical equations will be tested. In the

state of matter and kinetic theory section, questions concerning formation of crystals, phase changes, kinetic molecular theory; and the relationship between volume, pressure, temperature and the number of molecules of a gas will be covered. Questions pertaining to chemical bonding and the mole will test your knowledge of bonds, structural formulas, electron dots, the nomenclature of organic and inorganic compounds, chemical formulas, chemical composition and the mole concept. Questions pertaining to periodicity will test your knowledge of periodic trends of chemical and physical properties and the definition of chemical periodicity.

Physical Sciences: This section will be focus on physics. Under physics the following topics will be covered: Mechanics, electricity, magnetism, and waves. Questions pertaining to waves will test your knowledge of geometric optics and polarization, color and the visible spectrum, the electromagnetic spectrum, the production of sound waves, polarization, and the Doppler effect. Your knowledge of inference, diffraction, supra position, scattering, transmission, dispersion, distortion, reflection, fraction, longitudinal and transverse waves, frequency, wavelength, amplitude, and speed of waves will be tested in this section of the exam. Questions pertaining to electricity and magnetism will test your knowledge of how motors work, transformers, magnetic forces, magnetic fields, sources of EMF, direct and alternating current, Ohms law and parallel circuits. Your knowledge of insulators, conductors, parallel circuits, series circuits, current, capacitance, electromotive force, resistance and ohms law, along with the attraction, repulsion and attraction of electrical charges will be tested in this section. The questions pertaining to mechanics will test your knowledge of Bernoulli's principal of fluids, Archimedes principal, Pascal's fluid principle, the force of gravity, torque, momentum, and angular momentum conversion. Questions pertaining to conservation of linear momentum and energy, torque, simple machines, power, energy, weight, mass and Newton's law of motion, friction, and the variables of periodic, circular, projectile and straight-line notion will also be covered in this section.

Scientific Methodologies, Techniques and History: This section will focus on nuclear and anatomic structure, thermodynamics, heat, energy, matter, laboratory safety procedures, data manipulation, measurement and mathematics and the methodology and philosophy of science. Questions pertaining to nuclear anatomic structure will test your knowledge of nuclear reactions, radio activity, radioisotopes, chemical properties of an atom, electronic configuration, atomic and nuclear forces, atomic models and their experimental bases. Questions pertaining to thermodynamics and heat will test your knowledge of the laws of thermodynamics, quantitative issues pertaining to the transfer of thermal energy, the transfer, measurement effect of thermal energy on matter, and the ability to distinguish between heat and temperature will be tested. For the questions pertaining to energy and matter your knowledge of energy transformations, conservation of energy, mass, physical and chemical changes of matter, factors that impact the abundance of elements, and the structure and properties of matter will be tested. For questions pertaining to laboratory safety and procedures your knowledge of emergency procedures and safety and a science laboratory and classroom, identification of field and laboratory equipment for scientific procedures, and the understanding of procedures for safe preparation, storage, usage of

field and laboratory materials will be tested. In the data manipulation, measurement and mathematics section data error sources, interpretation of data from charts, maps, tables and graphs; presentation, manipulation, interpretation and collection of scientific data, and scientific notation and measurement systems will be covered in this section.

Scientific Methodologies, Techniques and History: This section will test your knowledge of the integrative and unified nature of scientific concepts and their relation to various different disciplines, the history of science, experimental design and solving problems with scientific processing skills and scientific methods will be tested.

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