Article 9 Appendix 2

Senior Professional and Technical Examinations for Engineers—Exam Subjects

No.	Exam Category	Exam subjects
1.	Civil Engineer Exam	1. Structural analysis (including mechanics of material and theory of structure) 2. Structural design (including design of reinforced concrete and steel structural design) 3. Geotechnics (including soil mechanics, foundation engineering and engineering geology 4. Engineering survey (including plane survey and construction survey) 5. Construction method (including civil engineering, construction method and engineering material) 6. Construction management
2.	Hydraulic Engineer Exam	1. Fluid mechanics 2. Hydrology 3. Water resources engineering and planning 4. Geotechnics (including soil mechanics, foundation engineering and engineering geology) 5. Channel hydraulics 6. Hydraulic engineering (including coastal engineering, flood control and drainage engineering)
3.	Structural Engineer Exam	1. Mechanics of material 2. Theory of structure 3. Design of reinforced concrete and design of prestressed concrete 4. Steel structural design 5. Soil mechanics and basic design 6. Structural dynamics analysis and aseismatic design
4.	Geotechnical Engineer Exam	1. Soil mechanics (including soil dynamics) 2. Foundation engineering and design (including excavation engineering and related foundation structure design) 3. Engineering geology and site investigation 4. Hillside works (including soil and water conservation engineering) 5. Rock mechanics and tunneling

No.	Exam Category	Exam subjects
		6. Geotechnical engineering
5.	Survey Engineer Exam	1. Geography information system 2. Least squares adjustment 3. Plane survey 4. Cartography 5. Geodetic survey 6. Aerial survey
6.	Environmental Engineer Exam	1. Fluid mechanics and hydrology 2. Environmental chemistry and Environmental microbiology 3. Water supply engineering and sewage works 4. Waste engineering 5. Air pollution and noise control engineering 6. Environmental planning and management
7.	Urban Planning Engineer Exam	1. Land use and public facility projects 2. Regulations on urban and district plans 3. Project analysis approach 4. Urban traffic plan 5. Environmental planning and design 6. Urban engineering
8.	Mechanical Engineer Exam	1. Thermodynamics and heat transfer (including heat engine) 2. Electrical engineering (including electric machinery) 3. Fluid mechanics and fluid machinery 4. Mechanism and machine design 5. Engineering mechanics (including statics, dynamics and mechanics of material) 6. Machine building
9.	Refrigeration And Air-Conditioning Engineer Exam	1. Refrigerating engineering and design 2. Air conditioning engineering and design 3. Thermodynamics and heat transfer 4. Automatic control for refrigeration and air-conditioning 5. Electrical engineering (including electric machinery) 6. Fluid mechanics and fluid machinery
10.	Naval Architecture Engineer Exam	1. Shipbuilding design (including shipbuilding principles) 2. Marine engineering 3. Electrical engineering (including electric machinery) 4. Fluid mechanics 5. Engineering mechanics (including statics, dynamics and

No.	Exam Category	Exam subjects
		mechanics of material) 6. Theory of ship structure
11.	Electrical Engineer Exam	1. Electronics (including power electronics) 2. Circuitry 3. Engineering mathematics (including linear algebra, differential equation, complex function and probability) 4. Electric machinery 5. Power system 6. Industrial power distribution
12.	Electronic Engineer Exam	1. Electronics 2. Electromagnetism and electromagnetic wave 3. Engineering mathematics (including linear algebra, differential equation, vector analysis, complex function and probability) 4. Circuitry 5. Electronic computer theory 6. Communication system
13.	Information Engineer Exam	1. Mathematics for computer science 2. Data structure & database and data mining 3. Computer system 4. Programming 5. Systematic analysis and information security 6. Network principles and applications
14.	Aeronautical Engineer Exam	1. Aerodynamics 2. Aircraft engine 3. Avionics system (including flight instruments) 4. Introduction to aircraft structures 5. Aircraft design 6. Flight mechanics (including automatic control and airplane performance)
15.	Chemical Engineer Exam	1. Transport phenomena and unit operation 2. Biochemical thermodynamics 3. Chemical reaction engineering(or chemical engineering kinetics) 4. Industrial chemistry 5. Process control 6. Process design

No.	Exam Category	Exam subjects
16.	Industrial Engineer Exam	1. Operation research 2. Engineering statistics and quality management 3. Production management 4. Engineering economy 5. Facility planning and automated manufacturing system 6. Human factors and ergonomics
17.	Industrial Safety Engineer Exam	1. Regulations on labor safety and health 2. Risk and hazard assessment 3. Industrial safety engineering 4. Industrial safety management (including applied statistics) 5. Introduction to industrial hygiene 6. Human factors and ergonomics
18.	Occupational Hygienist Exam	1. Regulations on occupational safety and sanitation & introduction to occupational safety 2. Hazard identification and introduction to occupational diseases 3. Occupational health and health management practice 4. Workplace environmental control engineering 5. Workplace monitoring 6. Exposure and risk assessment
19.	Textile Engineer Exam	1. Textile goods inspections 2. Study of textile materials (including physical and chemical properties of textile fiber and synthetic fiber production) 3. Textile engineering 4. Weaving engineering (including weaving, knitting, and felt) 5. Dyeing process (including scouring/bleaching, dyeing, and printing) 6. Textile finishing
20.	Food Technologist Exam	1. Food chemistry 2. Food analysis and inspections 3. Food microbiology 4. Food processing 5. Food sanitation/safety and regulations 6. Food factory management
21.	Metallurgical Engineer Exam	1. Metallourgy thermodynamics 2. Material science

No.	Exam Category	Exam subjects
		3. Ferrous metallurgy 4. Physical metallurgy 5. Metalworking (including casting, forging, soldering, and heat treatment) 6. Material analysis technology
22.	Agronomist Exam	1. Soil science 2. Crop science 3. Introduction to crop production 4. Crop physiology 5. Crop breeding 6. Experimental design
23.	Horticultural Technologist Exam	1. Pomology 2. Olericulture 3. Study of flowers 4. Landscape gardening 5. Postharvest handling of horticultural products (including horticultural crop processing) 6. Horticultural crop breeding and reproduction
24.	Forestry Technologist Exam	1. Silviculture (including forest protection) 2. Forest regulation (including inductive statistics) 3. Forest ecology (including forest resources and conservation) 4. Dendrology 5. Forest policy (including forestry regulations) 6. Timber utilization (including timber physics, timber processing, and timber chemistry)
25.	Livestock Technologist Exam	1. Livestock anatomy and physiology 2. Livestock breeding 3. Livestock nutrition 4. Livestock studies (including study of pigs, study of cows and study of poultry) 5. Hygiene of domestic animals and fowls 6. Utilization of animal products (including meat processing and dairy product processing)
26.	Fishing Technologist Exam	1. Introduction to fisheries 2. Fishing methodology 3. Study on fishing gear (including fishery instruments)

No.	Exam Category	Exam subjects
		4. Marine fishery resources 5. Oceanography and meteorology 6. Fishing ground study
27.	Aquacultural Technologist Exam	1. Introduction to fisheries 2. Aquatic life physiology 3. Fish diseases 4. Aquaculture (including aquacultural engineering) 5. Aquaculture feeds and baits 6. Fish pond ecology and management
28.	Soil And Water Conservation Engineer Exam	1. Soil physics and erosion 2. Hill slope hydrology 3. Surveying (including plane survey, topographic surveying and aerial photo interpretation) 4. Soil and water conservation engineering 5. Vegetation engineering 6. Soil and water conservation planning (including regulations on water and soil conservation)
29.	Mining Engineer Exam	1. Mine ground design and environmental maintenance 2. Surveying 3. Geology and ore deposit 4. Mining engineering (including mine safety) 5. Petroleum exploration 6. Ore dressing
30.	Applied Geological Engineer Exam	1. General geology (including environmental geology) 2. Geotechnics (including soil mechanics and rock mechanics) 3. Engineering geology (including hydrogeology) 4. Mineralogy and petrology(including economic geology) 5. Stratigraphy and structural geology 6. Geological survey (including geophysical exploration)
31.	Mining Safety Engineer Exam	1. Regulations on mine safety and sanitation 2. Mine accidents and responses 3. Mining engineering 4. Mining and drainage 5. Explosives and blasting 6. Mine safety (including practical safety management)
32.	Transportation	1. Traffic engineering and design

No.	Exam Category	Exam subjects
	Engineer Exam	2. Research and analysis method 3. Transportation engineering 4. Transportation planning 5. Traffic safety 6. Traffic control
Note		All subjects are tested in essay format.