Area 1 — RF Engineering, Propagation, & Antennas: (出題比率 18%~22%)

evaluate system performance and reliability; calculate path loss; evaluate the effects of different fading models and empirical pathloss models; calculate and evaluate the effects on the received signal of path-related impairments;determine parameters related to antennas or antenna arrays; generate and evaluate coverage and interference prediction maps; develop procedure to optimize the coverage of a radio; make RF system measurements.

Area 2 — Wireless Access Technologies: (出題比率 18%~22%)

analyze building blocks, multiple access,mobility management, and spectrum implications in wireless access system design; design considerations to optimize capacity/coverage; design a wireless access system; analyze the required bandwidth for a wireless system and tradeoffs; analyze wireless access technology standards, their features, and evolution.

Area 3 —Network and Service Architecture: (出題比率 18%~22%)

analyze service platforms, IP addressing schemes for various technologies; design and test quality of service (QoS); select and test a load-balancing scheme; analyze IP routing and ad hoc routing and mesh protocols; perform capacity planning, error tracking, and trace analysis; analyze the evolution of mobile networks to enable IP multimedia.

Area 4 — Network Management and Security: (出題比率 11%~15%)

design a fault monitoring system and a performance monitoring system; develop/specify types and methods of alarm reporting;compute availability and reliability metrics; assess the potential impacts of known security attacks; plan corresponding solutions to known security attacks.

Area 5 — Facilities Infrastructure: (出題比率 6%-8%)

determine power consumption; analyze electrical protection requirements and design the electrical protection layout for a wireless telecommunications facility; determine the required antennas for the facility and their positions; develop a specification for he required structure for a wireless base station facility;determine the required cable, antennas, and materials to implement an in-building wireless network; evaluate equipment compliance with industry standards, codes, and site requirements.

Area 6— Agreements, Standards, Policies, and Regulations: **(出題比率 6%-8%)**

assess service and equipment quality; prepare specifications for purchasing services and equipment and evaluate the responses; verify compliance with regulatory requirements; select and analyze frequency assignments; perform standardized homologation tests as required by regulatory or standardization bodies;evaluate compliance with health, safety, and environmental requirements; perform conformance/ interoperability analyses of systems and components; analyze the use of licensed vs.unlicensed spectrum; obtain licenses and permits.

Area 7— Agreements, Standards, Policies, and Regulations: **(出題比率 8%-12%)**

Fundamental Knowledge: related to electrical engineering, communications systems, general engineering management.